

Programming Manual

for the MX-950, MX-900 and TX-1000
Unleashing the MX-950 Core Engine



**COMPLETE™
CONTROL**

BY  Universal Remote Control®

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The MX-950 "Core Engine"



What's Common? SPEED!!!

New Programming Features:

All three applications, MX-950, MX-900 and TX-1000 share all the convenience and speed of MX-3000 Editor combined with the simple, straightforward interface of the MX-850. You'll find that many things that were difficult or impossible to do with MX-850 are now very easy to do with the MX-950 Core Engine:

- Drag and Drop single IR Commands without creating a new device
- Multiple page jumps during macros for easy programming of Status Messages
- Better Text display. TX-1000 allows six characters per label, MX-900 allows seven and MX-950 allows up to eleven!
- Nesting - All three remotes enable you to modularize your code with one macro "nested" as a single step inside another macro.
- No need for Shortcuts - If you need a ROUTED command from one device on another device, record a macro of a single step. This will respond exactly the way the original button does, including repeating while the button is held, but is routed via the original commands routing.
- All three remotes can now be programmed with a Navigate - Page jump, which allows you to program buttons with a BACK button that takes them back to the last device they were on.

Key Differences:

- Only MX-950 and TX-1000 can change the color of the backlighting per device. MX-900 has blue backlighting only.
- Only MX-950 can change the TEXT label of a button during a macro.
- Only MX-950 can use GRAPHICS on the LCD screen.
- Only MX-950 can use SOUNDS in macros.
- Only MX-950 can use VARIABLES in macros.

The TX-1000 Editor Window

The screenshot shows the '1000 Editor - demo.mxt' application. On the left, a 'Tree View' (B) displays a hierarchical menu for the TX-1000 remote, including sections like WATCH, LISTEN, and AUDIO. The central 'Simulate View' (C) shows a virtual representation of the TX-1000 remote with its screen displaying 'WATCH' and 'PAGE 1' with buttons for TV, CABLE, DVD, SAT, UCR, DUR, LIGHT, and FAU. On the right, the 'Edit Buttons Window' (D) is open, showing a 'Button Name' field with 'CABLE' and a 'Macro Window' (E) with a table of macro steps.

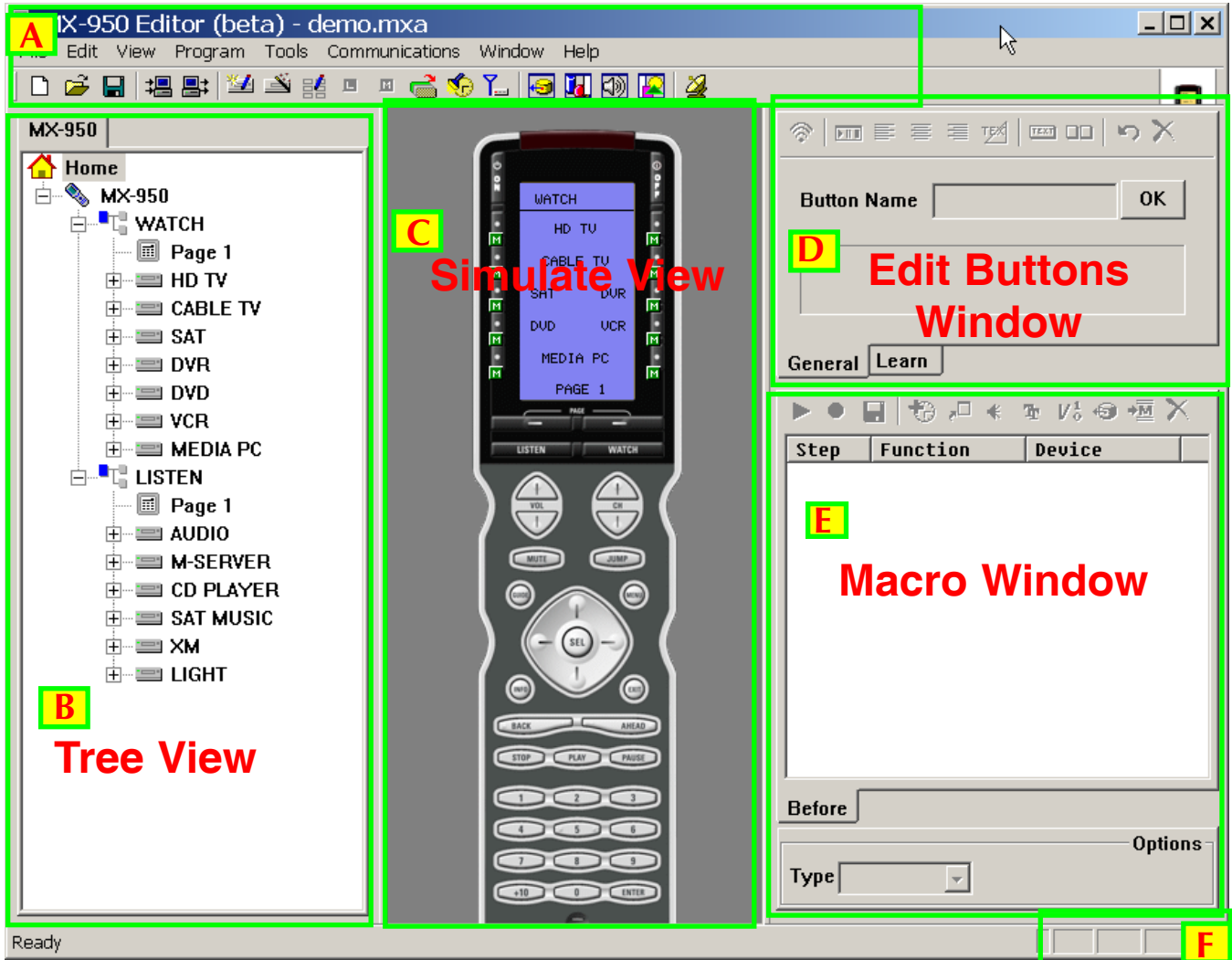
Step	Function	Device
1	<GOTO PAGE>	CABLE - P1
	-- END --	

The MX-900 Editor Window

The screenshot shows the '900 Editor - demo.mxg' application. The 'Tree View' (B) on the left lists functions for the MX-900 remote, such as WATCH, HD TV, CABLE, DVD, DVR, SAT, VCR, LISTEN, AUDIO, M-SERVE, CD PLAY, MUSIC, XM, and LIGHT. The 'Simulate View' (C) displays a virtual MX-900 remote with its screen showing 'WATCH' and 'PAGE 1' with buttons for HD TV, CABLE, DVD, DUR, SAT, and UCR. The 'Edit Buttons Window' (D) shows a 'Button Name' field with 'HD TV' and the 'Macro Window' (E) with a table of macro steps.

Step	Function	Device
1	<GOTO PAGE>	HD TV - P1
	-- END --	

The MX-950 Editor Window



- A** Menus and Shortcut buttons for common tasks. The Program Menu activates each task in the correct order.
- B** Tree View of your configuration. Double clicking on any page enables you to quickly display that page on the simulator view. Right clicking on a device or page activates a context menu.
- C** The Simulate View is used to navigate and to select a button to program, edit or record a macro.
- D** Edit and Label Buttons window is used to control a buttons graphics, text and activation.
- E** The Macro window is used to view and edit macros.
- F** The information bar displays whether your keyboard is cap locked or num locked.

The important thing to remember as you program is that most Windows conventions hold true in all URC Editors. Explore the program menus. Hover your mouse over most of the buttons and controls and a balloon will appear with a hint as to purpose. Navigate around the program window and explore a little before you begin programming.

Programming Overview

A. New File, Existing File on PC or in Remote

- NEW - Starting from scratch on a new job, go to the File Menu, choose New from the File Menu and pick either the default file or a blank file. The default template is pre-programmed with IR commands and is useful for quick testing, but everything will have to be reprogrammed for your system. A blank file is completely empty. It is really personal preference which way you start.
- OPEN - Open a configuration that you have worked on before and saved onto the PC hard drive.
- UPLOAD - Get a file from a client's remote control that another installer created. Now, you can save the file on your laptop, make any edits or changes as the client requests or the jobsite requires.

B. Use SAVE AS

The templates files are simply configuration files that have been preprogrammed for you. They will keep any changes you make. Utilize **Save As** to make a new file with a new file name. All configuration files are saved with the file extension .mxa.

TIP — Always use File | Save As to rename the file before doing any programming!

Use the customer's name and a rev # (i.e. SmithTheaterRev1.mxa)

C. Use the Program Menu



The Program Menu is your lifeline to a fast, easy programming experience. Follow the steps in the order shown in the Menu for best results. Typically, you will download to the remote control several times throughout this process and test what you have done so far. You'll need to download after finishing all programming. For macro playback to work, you need to have downloaded. These downloads are not listed in the steps here in the Program Menu and are not automatically done for you.

It is important that you do all of the tasks for each step before moving on to the next step. Keep this manual handy so that you can verify that you have completed all of your tasks.

D. Save and Reuse Customer Files

Archive and save your customer files. Programming systems with similar components gets even faster when you don't have to redo your work over and over. You have your own ideas about what buttons should be labeled and how they should be arranged. You'll save all of your work and reuse it on the next job with similar components and devices.

E. Download to both Remote Controls

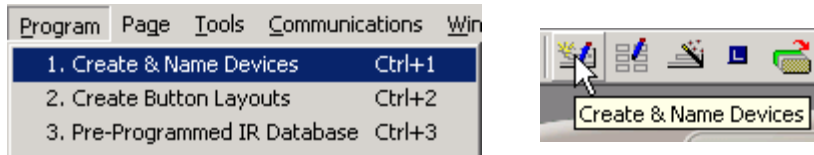
Test the file before training your client.

Creating, Naming and Arranging Devices

A device is the basic grouping of a set of hard buttons and up to 255 soft button pages. You will need one device group for each remote control that the MX-950 is replacing. You can have a maximum of 255 devices in your configuration. When you create devices in the Create and Name Devices window, every device is automatically linked with a jump-link to the device via either the WATCH or the LISTEN menu. If you create devices manually you have to create a jump link from either the WATCH or the LISTEN menu button to each device manually.

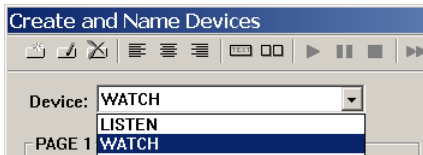
Open the Create and Name Devices Window

You can open the Create and Name Devices window by clicking on the first item of the Program Menu or by clicking on the Toolbar icon as shown here:



Creating Devices

- 1 After the Create and Name devices window appears, select the WATCH or the LISTEN menu from the Device list box:



- 2 **MX-950 Only:** Select the button position you'd like to create a new device name in by clicking on it. Now, decide if you need a double column or a single column label. A single column label can have up to 5 characters, a double column label up to 11 characters. When you combine a button, IR command or Macro programming will be duplicated automatically on both the left and the right button.

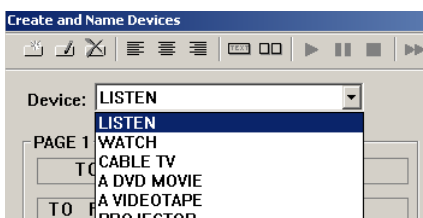
Combine both left and right buttons into one double column button.



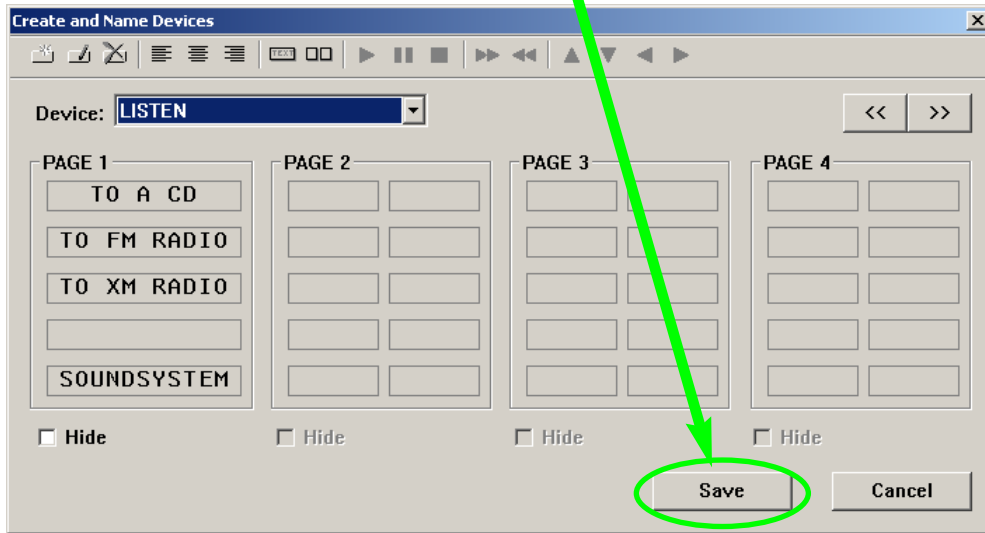
Separate a double column button into two separate buttons.

TIP - Use combined row LCD buttons to type user friendly labels for important activities.

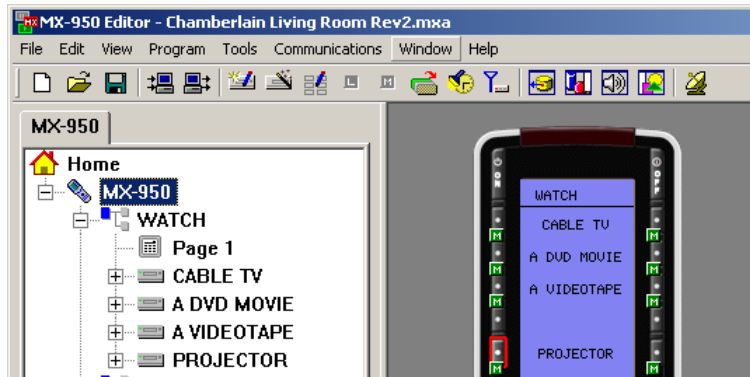
- 3 Now, select the LISTEN menu from the Device List box and create all the devices for listening.



- 3 You must hit the SAVE button to create all the new devices.



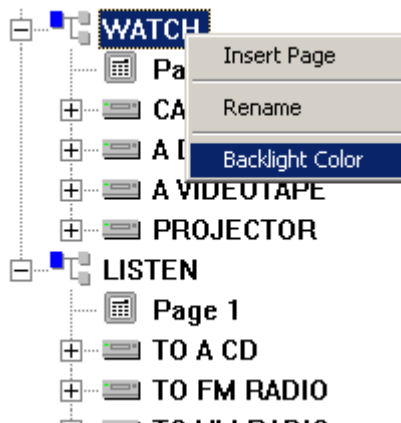
- 4 Tree View reveals the new devices you've created and the simulator shows the new WATCH page, with all the new device buttons displayed.



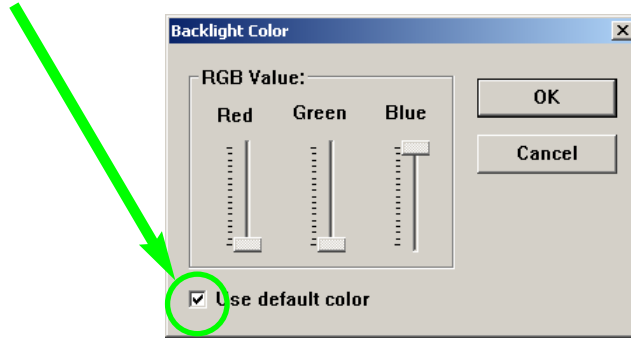
- 5 Select SAVE from the File menu or click on the SAVE icon on the toolbar.

Setting the Backlight Color of Each Device (MX-950 and TX-1000 Only)

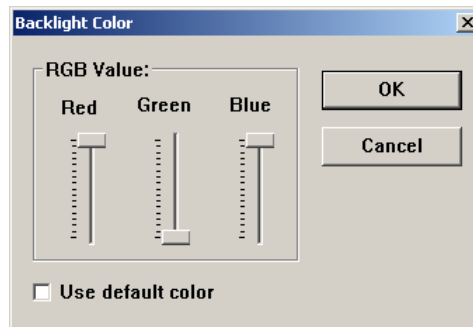
- 1 Right click on any device in Tree View (including the WATCH or the LISTEN device). Select Backlight Color from the context menu that appears.



- 2 Uncheck the Use Default Color checkbox, by clicking on it.

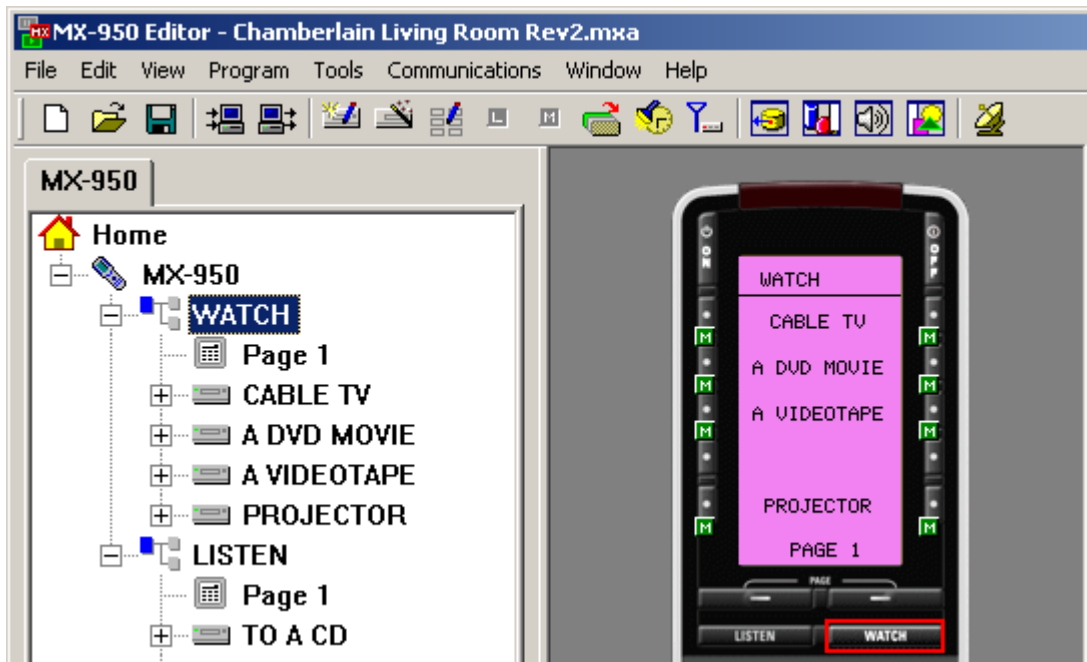


- 3 Adjust the sliders to the new color setting, then click on OK to save your changes.



TIP - Use two colors or more for the brightest backlighting!

- 4 The new color now shows on the simulator.

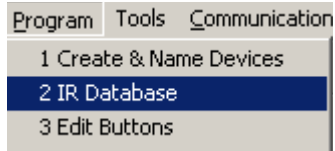


MX9500 TX1000 MX900 LCD REMOTES

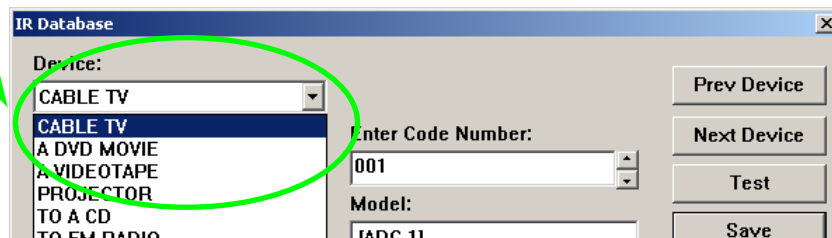
Using the IR Database

Applying a "Set" of IR Commands to each Device

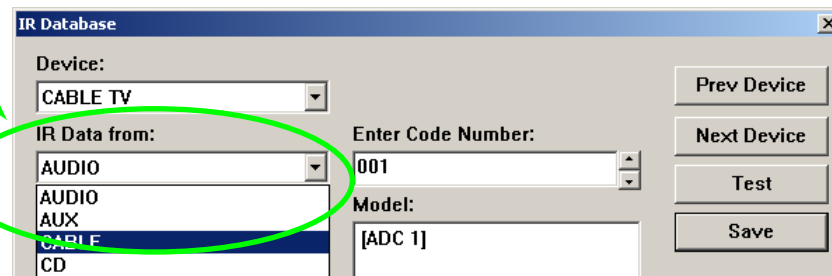
- 1** Open the Database Window - Select IR Database from the Program Menu or the Toolbar.



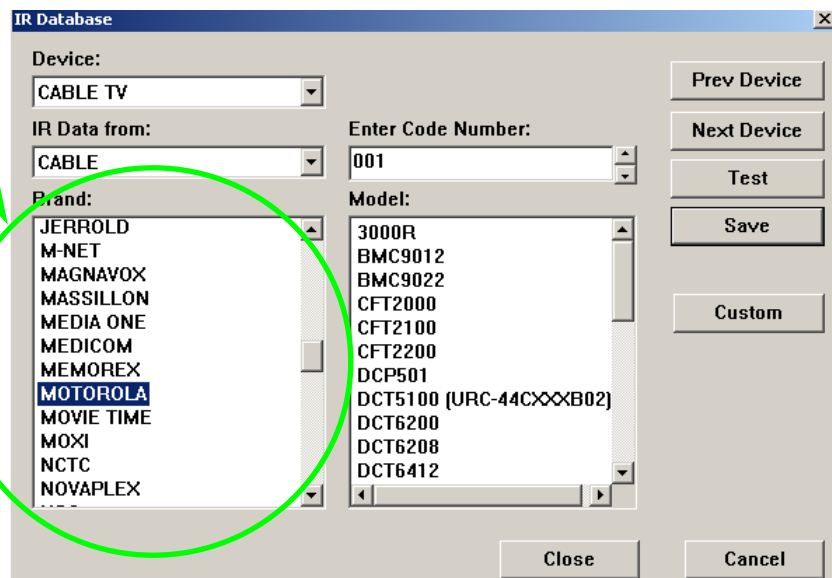
- 2** Device - In the first list box, MX-950 Editor lists the names of the devices you've created and named in your configuration. Select the device you would like to program from the list box.



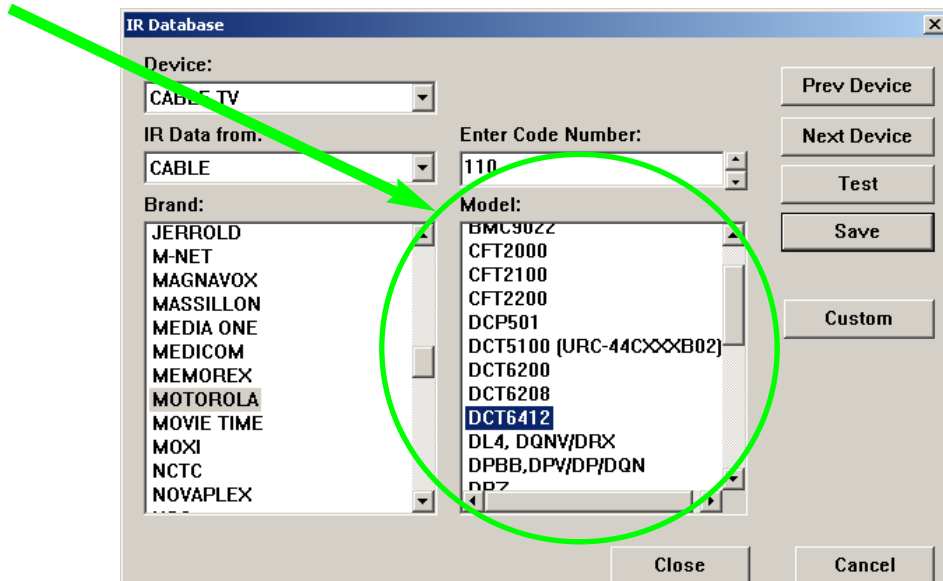
- 2** IR Data From - Select the type or category of component (i.e. TV, VCR or DVD player) via the "IR Data From" listbox.



- 3** Brand - Select the company that made the component (i.e. B & K, Sony, Krell) by clicking on the correct brand name in the scrollable Brand window.

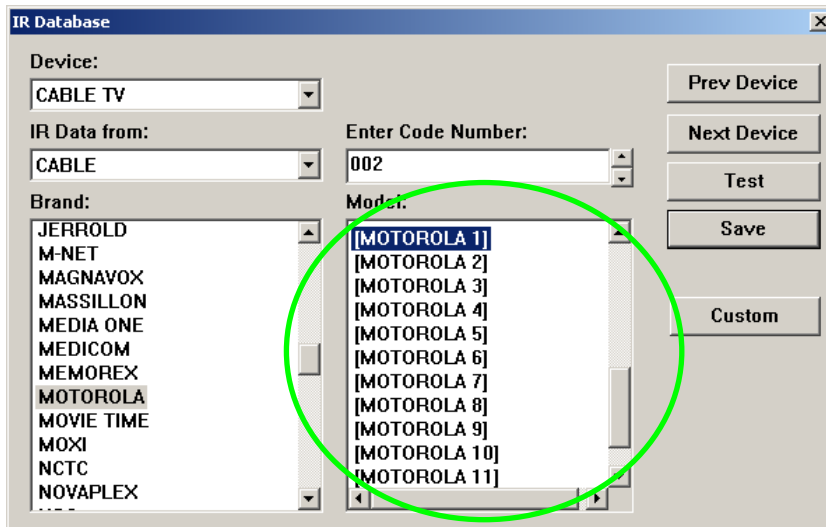


- 4 Model** - Select the exact model number from the scrollable Model window.



If the MODEL number isn't there, DON'T test the other model numbers! Instead...

Scroll to the bottom of the list of model numbers for your brand. There you will find a number of "Inclusive" Code Sets. These code sets are always labeled BRAND1, BRAND2 (i.e.. Motorola1, Motorola2). Each will operate many different model numbers. Generally speaking, if your component is a recent model, test the higher numbered Inclusive code sets first. Here's what the inclusive code sets look like:



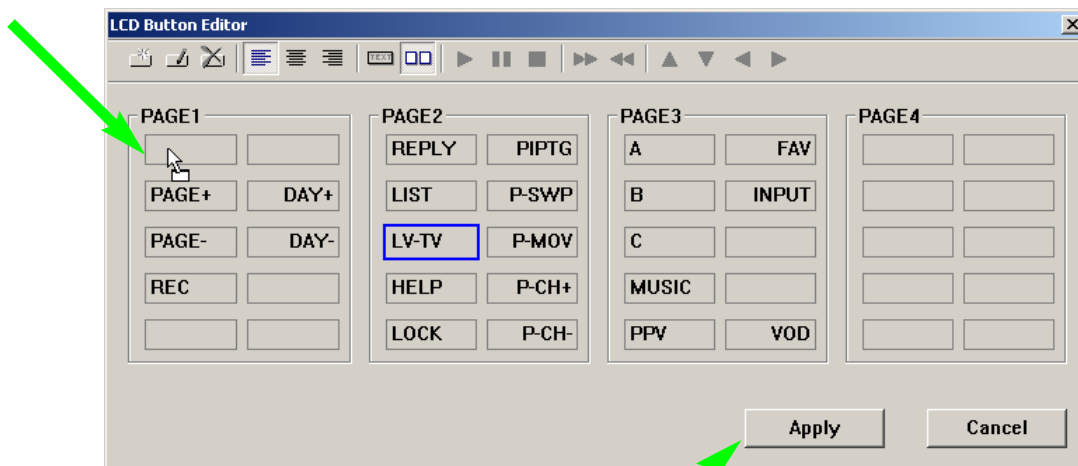
5 Test the Code Set

- Verify the MX-950 is charged and connect it to the PC via the USB port.
- Point the connected MX-950 so that it is in range and within line of sight of the component.
- Power On the component.
- Select the model number or the Inclusive Code set in the model window.
- Click on the **Test** button as shown above. The only code you can test is the Power command.
- If the component DOESN'T power off, try the next Inclusive code set.

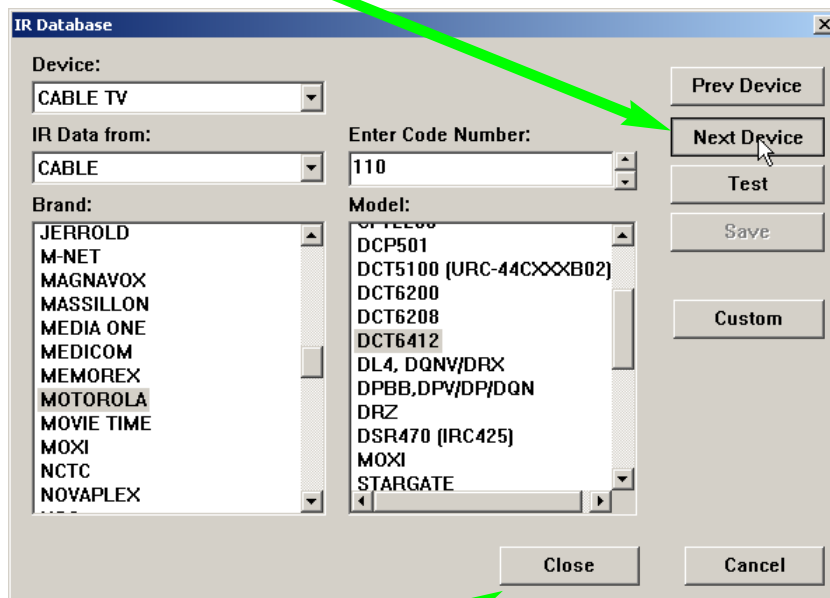
- 6** Once the component powers off, click on the Save button.

TIP - If you'd like to drag one code to a button or test one code , use the IR Navigator, page 11.

- 7 After you click on the SAVE button, the LCD Button Editor appears, revealing the pages and codes that will be created. Re-arrange the codes by clicking and dragging any label to any blank position. In this screen shot, you can see that the Live TV DVR command is being dragged to an empty position on page one. This empty position was created by dragging some less important commands to page three.



- 8 Once you have placed the most important commands on page 1, and the less used commands on the other pages, click on the APPLY button.
- 9 Continue with the rest of the devices you need by clicking on the NEXT DEVICE button and repeating steps two through eight.



- 10 When you have finished all of your devices, click on the CLOSE button.

Finding Discrete Commands for Reliable Macros

Discrete Commands versus Toggle Commands

When a remote control's only button to turn on and off a TV set is labeled Power, it is usually a "toggle" command. Test it by pressing the button twice. If the power button turns on the TV, then turns it off, it is a toggle command. You cannot predict whether the component will power on or not. That is a big problem when you are programming macros! Basically, your client will feel that the macro only works half the time, and will probably blame you for the problem.

Discrete means that the function of the command is "separate and distinct" from any other function. On a remote control with "discrete" power commands, there are two power buttons. One that only turns the component on, and another that only turns the component off.

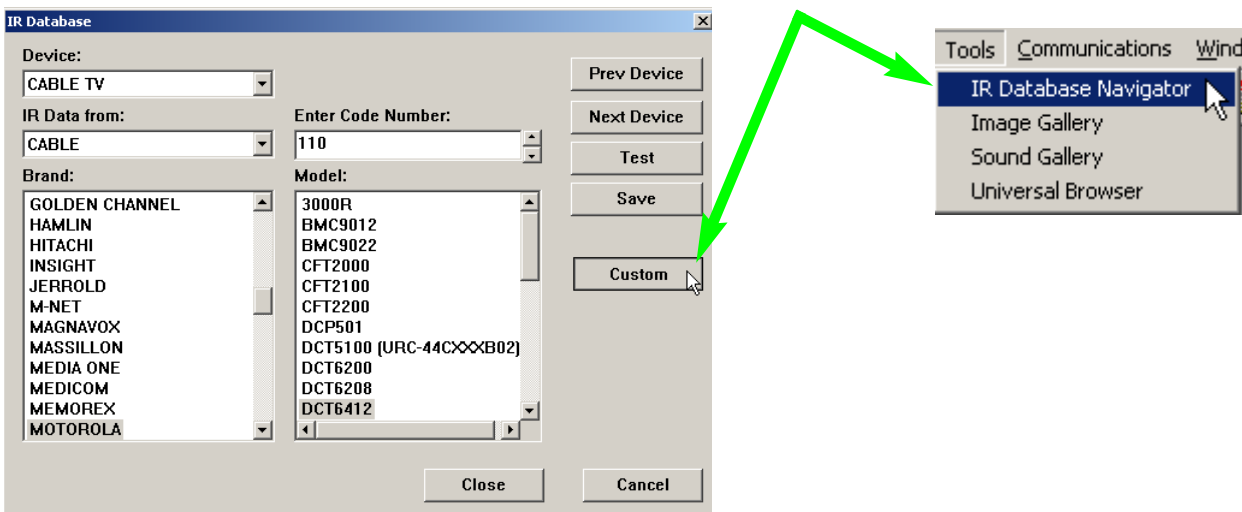
The most commonly sought "discrete" commands are for power on, power off and for TV and Surround Sound Receiver INPUT selection. These discrete commands will make your macros work every time for your customer.

"Secret" Discrete Codes exist for some components. Why are they secret? Because the manufacturer wants the remote control that accompanies the component to have the simplest appearance (fewest buttons). Since toggles reduce the number of buttons, they make the remote control appear easier to operate. Many manufacturers understand the needs of custom installers and build their components to also respond to discrete codes. They distribute the discrete codes via service remotes, etc. For the first time, those codes are collected and integrated into our database.

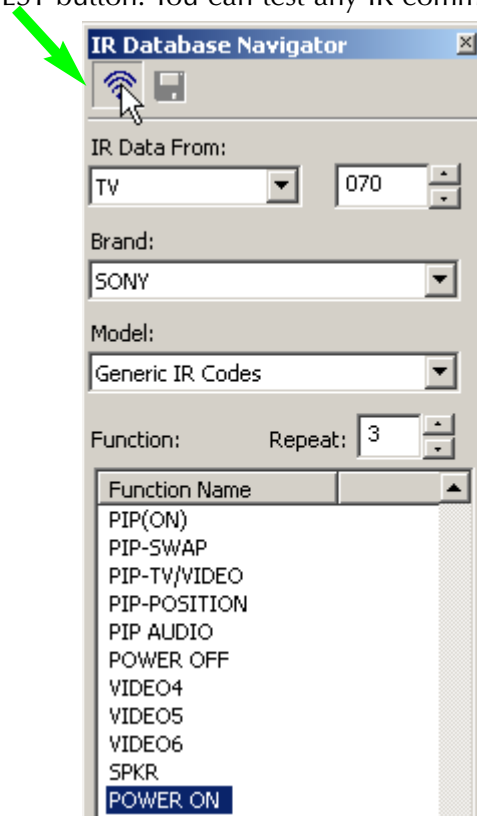
Not all components respond to the discrete codes in the Database. A component has to be BUILT to respond to discrete codes. The fact that other models from the same manufacturer do respond to discrete codes is the reason the codes are added to a code set. However, some models will not respond, because the manufacturer did not build it to respond through budgetary considerations, time constraints or a simple oversight.

Use the IR Database Navigator to Find Discrete Commands

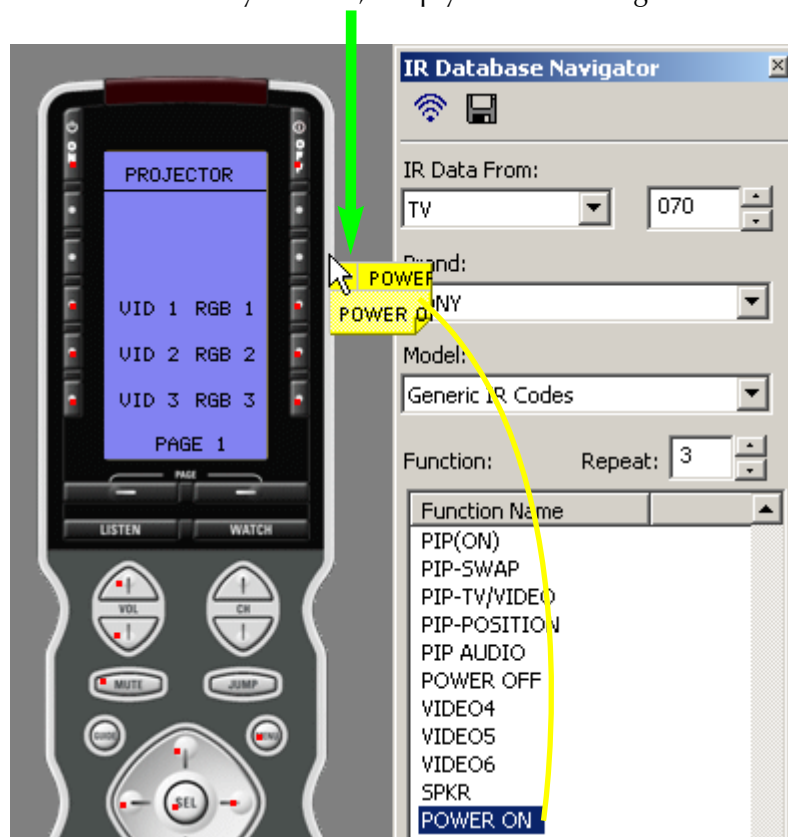
- 1 Open the IR Database Navigator by clicking on the CUSTOM button in the IR Database window, or by clicking on IR Database Navigator in the TOOLS menu.



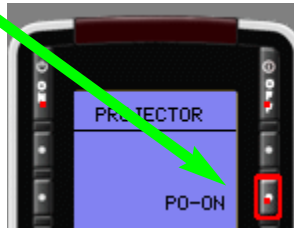
- 2 Select the IR DATA FROM (category of component), then the BRAND, then the MODEL. If you do not see the model number, utilize the INCLUSIVE CODE SETS (i.e BRAND1, BRAND2, etc). Once you see a command that has a promising sounding name, click on it so that it is highlighted (selected), then click on the TEST button. You can test any IR command in the list.



- 3 When you find a command that you want, simply click and drag it to the button on the simulator.

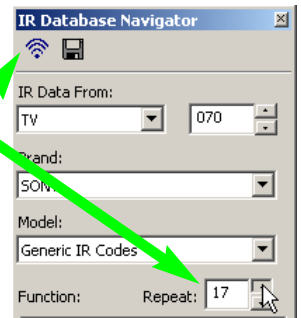


- After you've dragged it to its new position, the new label and a pre-programmed code flag (the red dot) is placed on the button.



TIP - Vary the number of REPEATS to sustain an IR command for a few seconds.

Many projectors require a two or three second burst to power on or off. You can program this to occur without the customer having to press and hold the button for several seconds by utilizing the repeat window in IR Database Navigator. Simply experiment with different numbers of repeats and test the command until it works as you want it to. There is no predictable relationship between the number of repeats and seconds from one brand to another, so start experimenting with 10 repeats and time the burst. Once you've programmed a button with this extended IR command, you can use it in a macro. The timed burst will occur as a single macro step.



Use the Universal Browser to find Discrete IR Commands

Using the Universal Browser Window you can import LEARNED IR codes from a .pcf file, an .mxf file or an .rcc file. You cannot import any kind of Database codes, only LEARNED codes.

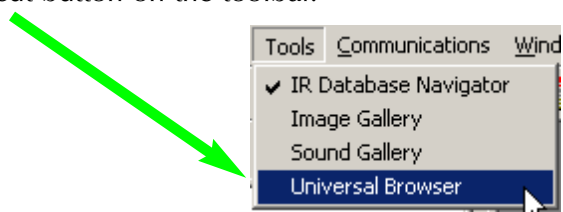
On the internet, you can find many unusual discrete codes by browsing the files section of a website popular with other custom installers:

www.remotecentral.com

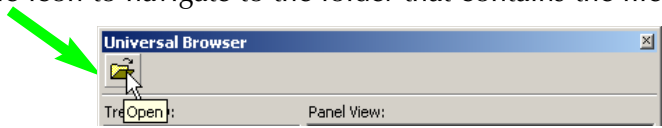
You can often find discrete codes by posting at one of many other sites popular with custom installers by posting on an online bulletin board. If any other custom installer knows of a solution he/she will email a file to you. Whether you download a file or if you are emailed a file from another installer, the Universal Browser enables you to import learned codes into your MX-950 configuration.

After you've saved the file to your PC, you use the Universal Browser as follows:

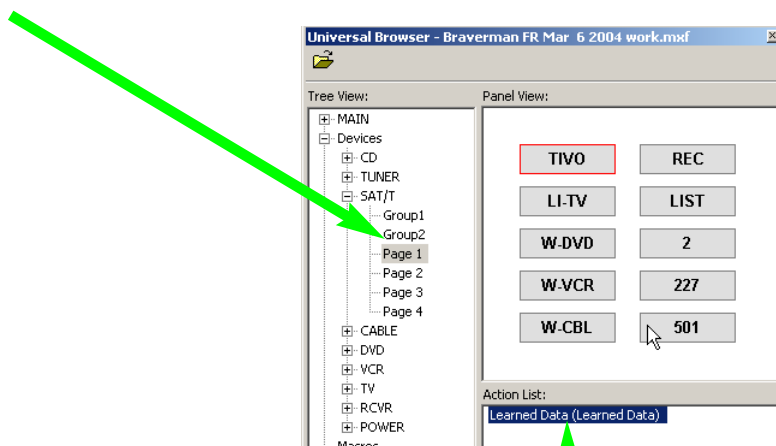
- Open the Universal Browser by clicking on the Universal Browser in the TOOLS menu or by clicking on the shortcut button on the toolbar.



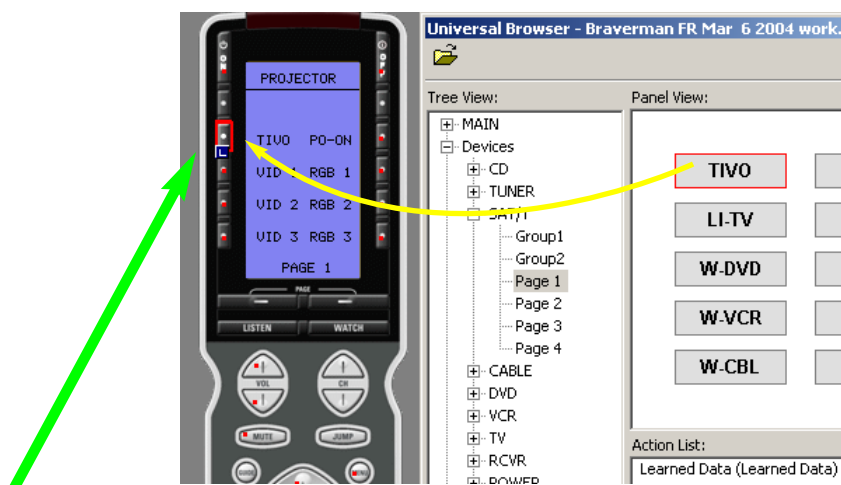
- Click on the File icon to navigate to the folder that contains the file you'd like to get codes from.




- 3 Use Tree View to Navigate to the Panel containing LEARNED IR codes you want. Click on the panel name in Tree View to make the panel appear in Panel View.



- 4 Click on a button in Panel View and the Action List view will reveal whether it has Learned Data or not. Only buttons with Learned Data can be transferred.
- 5 Click and drag the button to the MX-950 simulator.



- 6 After you've dragged the button, the blue  indicating a Learned IR command is displayed on the button.

Test All Commands and Relabel for Easy Operation

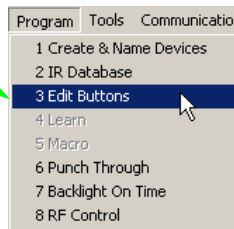
Before programming any further, you should rigorously test all of the codes you have programmed using the IR Database and label the buttons with names that the customer will find easy to understand. The best approach is to download, test all the commands, and as you test, use MX-950 Editor to modify labels, and hide or delete unnecessary commands.

MX-950 Editor enables you to use two methods to relabel and re-arrange commands and labels. Use the LCD Button Editor method if you are most comfortable with MX-850 Editor. Use the Page View method if you are most comfortable with MX-3000 Editor. Both have their advantages as you will see in the descriptions below.

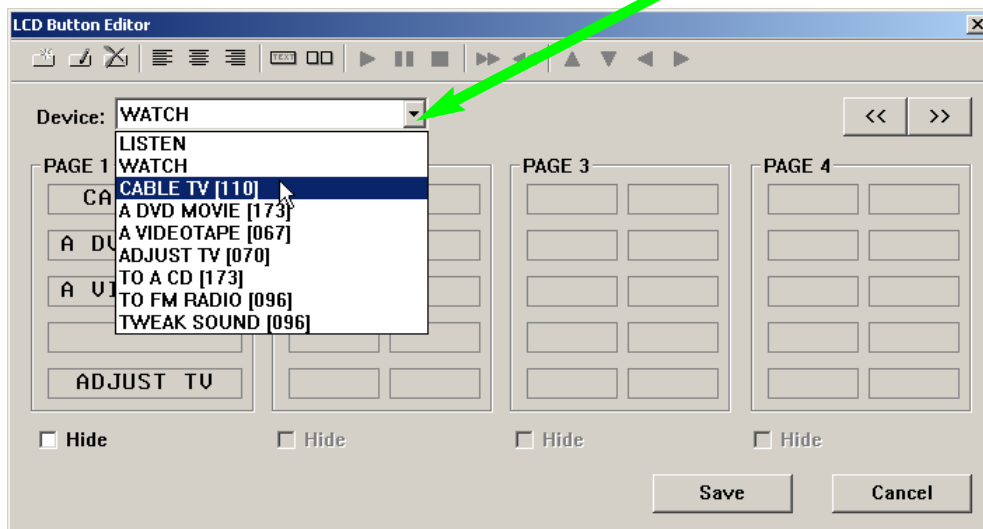
Using the LCD Button Editor to Relabel and Re-arrange Buttons

Begin testing the codes you downloaded to the MX-950. Make sure that you test all buttons (hard buttons and the LCD buttons on each page of every device). Don't try to learn new commands yet, wait until you can do all of them at once systematically. First you must delete commands that don't work and change the labeling so that your client instantly understands why you've made the button available to them. Good practice is to simply delete commands that the client will never use, or to arrange them on the last pages of a device. Certainly, your most important goal is to place the most useful commands on the first page of a device, so that the client has everything they need without pressing a PAGE button.

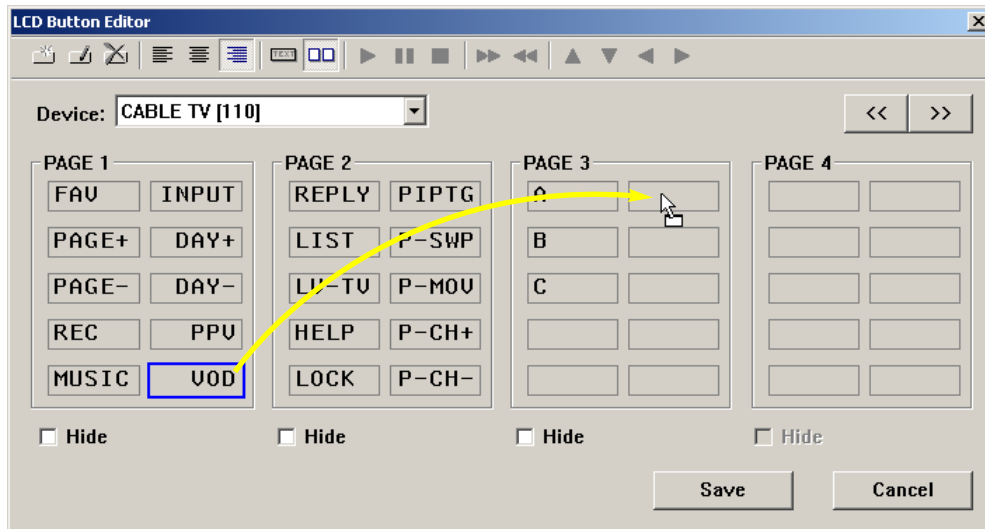
- 1 From the Program Menu, select Edit Buttons.



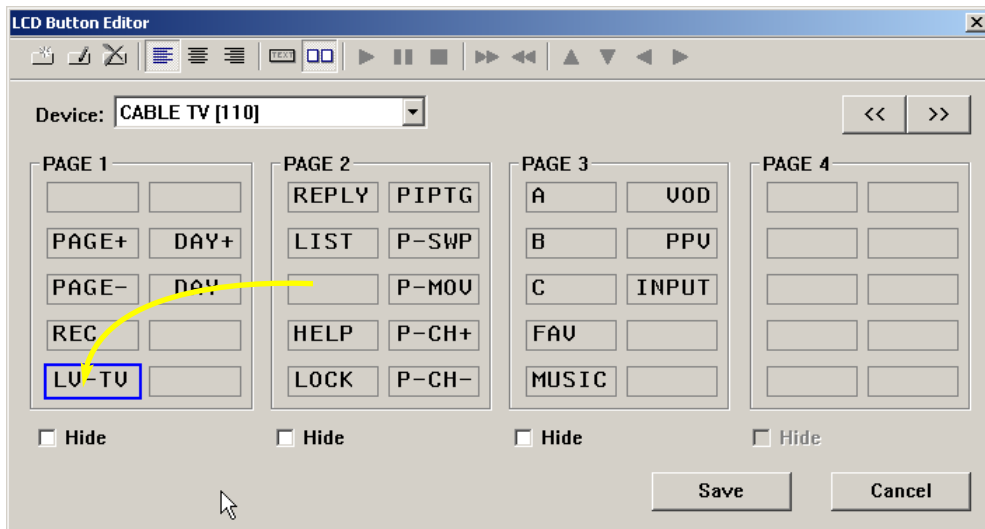
- 2 From the Device list box, select the first device you'd like to test and edit.



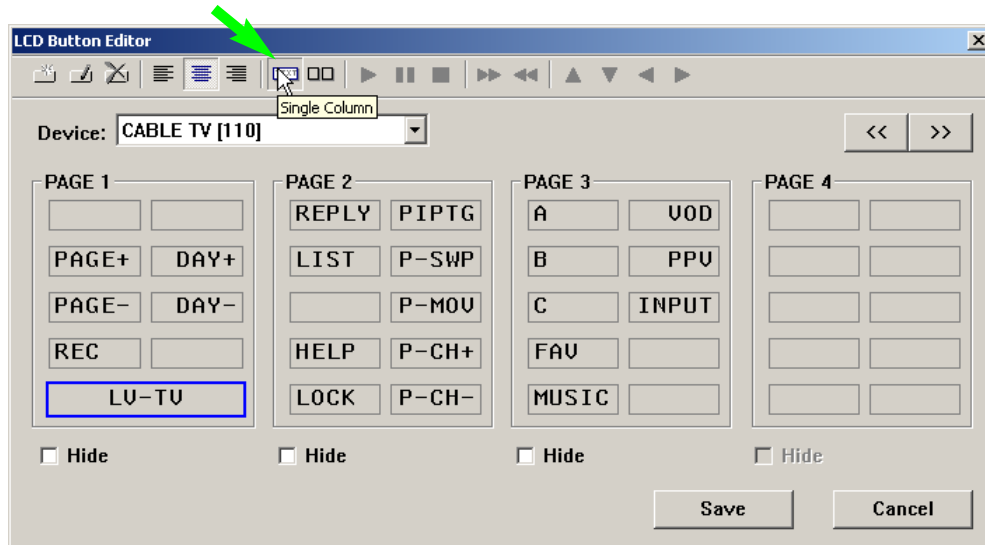
- 3 Now drag any unimportant commands from the first page to the last page of the device.



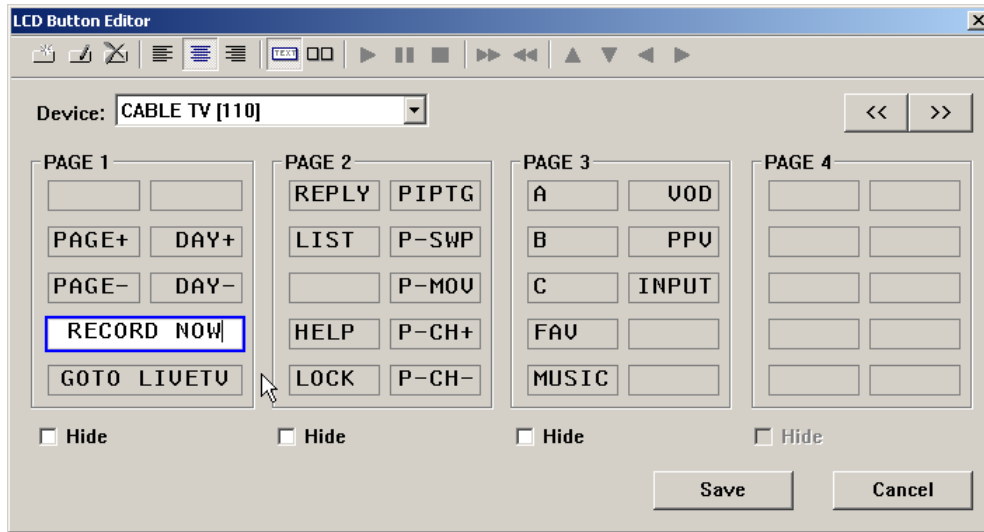
- 4 Take a look at all the other pages, drag any buttons you consider important to the first page.



- 5 **MX-950 Only:** Select a button you'd like to convert to Single Column and click on the Single Column button at the top of the window.



- 6 Select a button to relabel with a new easier to understand name and type it in.



- 7 Repeat Steps 2-6 and continue to test all commands for all of your devices by selecting a new device from the Device list box, then editing as needed. If you are missing a command and need to learn it, delete any buttons that you don't need and relabel to prepare for learning.

Tip - It's fastest if you don't click on SAVE until you have finished all testing and relabeling.

SAVE exits the Edit and Label Buttons window, so you would have to reopen it if you haven't finished editing all your devices.

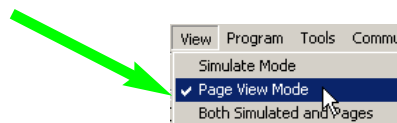
Hiding Pages in LCD Button Editor

A hidden page is accessible during programming so you can teach commands to buttons on hidden pages and use them in macros. The interesting thing about hidden pages is that the end user cannot manually access the page using the PAGE button. You HIDE pages using the HIDE checkbox which appears at the bottom of each page in LCD Button Editor. Unlike MX-850 Editor, you can hide any page without hiding any other.

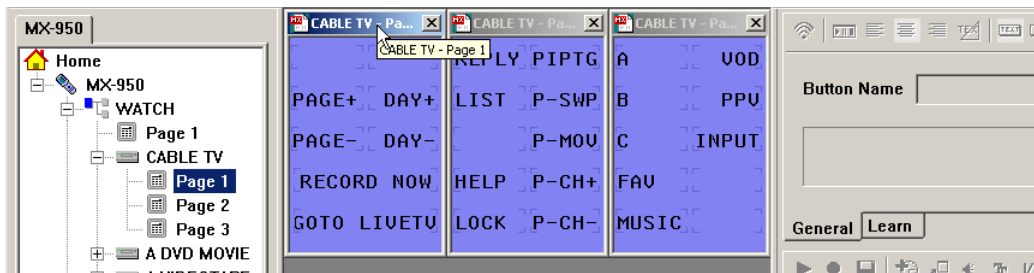
Using Page View to Relabel and Re-arrange Buttons

Begin testing the codes you downloaded to the MX-950. Make sure that you test all buttons (hard buttons and the LCD buttons on each page of every device). Don't try to learn new commands yet, wait until you can do all of them at once systematically. First you must delete commands that don't work and change the labeling so that your client instantly understands why you've made the button available to them. Good practice is to simply delete commands that the client will never use, or to arrange them on the last pages of a device. Certainly, your most important goal is to place the most useful commands on the first page of a device, so that the client has everything they need without pressing a PAGE button.

- 1 From the View Menu, select Page View Mode.

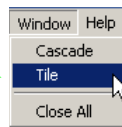


- 2 In Tree View, expand the device you would like to EDIT. In Tree View Double Click on each page of the device to display them. You can have as many pages open as you like.

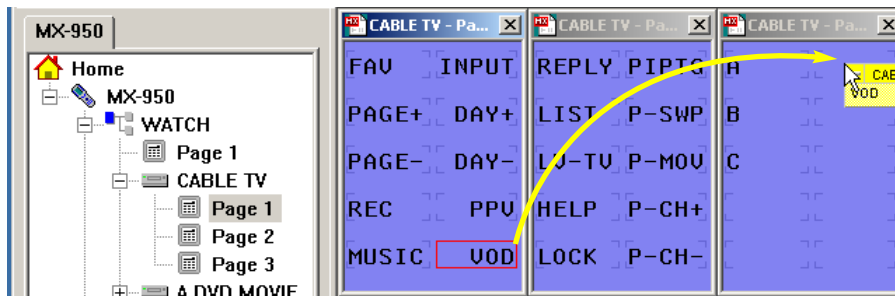


Tip - In Page View, you can drag and drop codes from one device to another.

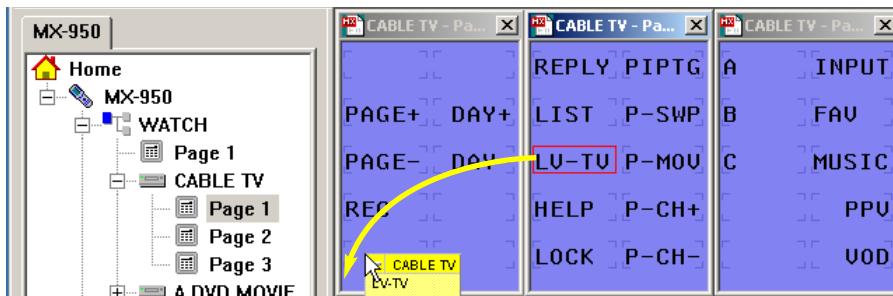
- 3 After you've opened all the pages you want to edit, go to the Window Menu and select "Tile", "Cascade" or if you'd like to clean things up, "Close All". Tile is usually the best option when lots of Pages are displayed.



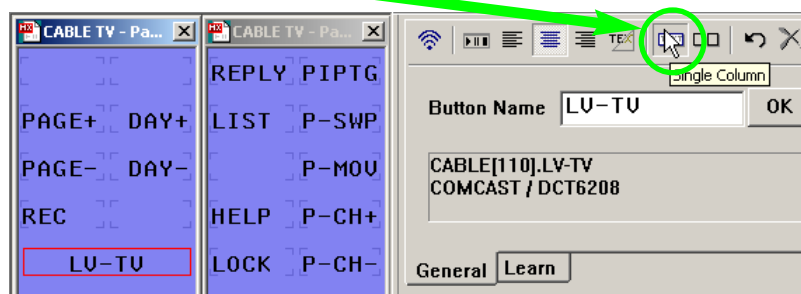
- 4 Now drag any unimportant commands from the first page to the last page of the device.



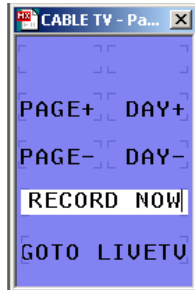
- 4 Take a look at all the other pages, drag any buttons you consider important to the first page.



- 5 Select a button you'd like to convert to Single Column and click on the Single Column button at the top of the Button Name window.



- 6 Select a button to relabel with a new easier to understand name and type it in.



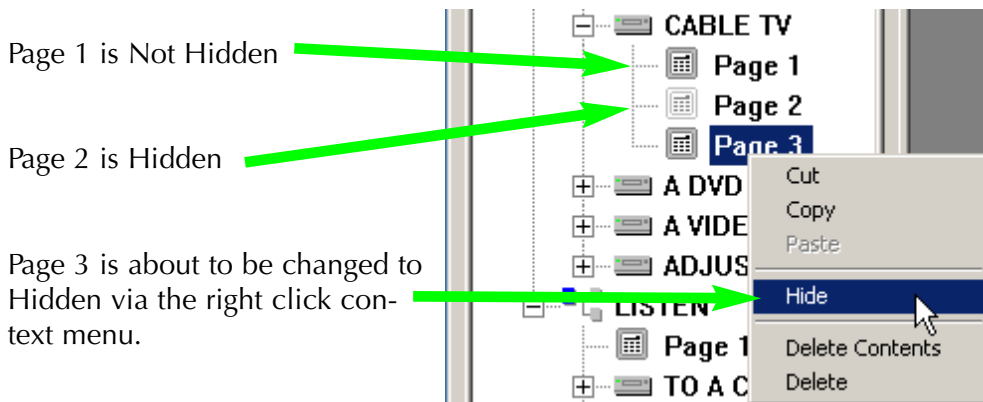
- 7 Repeat Steps 2-6 and continue to test all commands for all of your devices by double clicking in Tree View, then editing the pages as needed. If you are missing a command and need to learn it, delete any buttons that you don't need and relabel to prepare for learning.

Tip - Remember to periodically SAVE your work. MX-950 Editor does not save automatically.

Hiding Pages in Page View

A hidden page is accessible during programming so you can teach commands to buttons on hidden pages and use them in macros. The interesting thing about hidden pages is that the end user cannot manually access the page using the PAGE button. You HIDE pages by right clicking on a device in Tree View, then selecting Hide from the context menu that appears.

After you've hidden a page, the page is greyed out in Tree View.



Learning

Learning should be a last resort for professional installers. We make every effort to provide you with any codes you need via our database. If they are not, please make a note to email us at the first chance with the learned file you created, the type of device it is and the Brand and Model Number. If it is not a current model component, we would still like to add it to the database, but please note in your email the approximate age of the component. Please address your emails to:

IRDatabase@universalremote.com

Tips for Learning from Unusual Devices

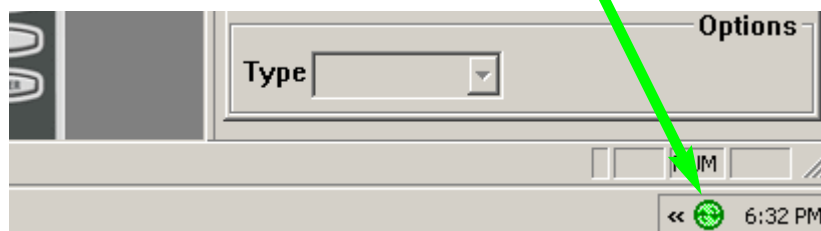
When you have difficulty successfully teaching codes to the MX-950, always try these tips in the order below:

- 1. Fresh Batteries in the Original Remote Control** - Weak batteries will cause MX-950 Editor to fail to correctly learn. Note that EVEN if the original remote still operates the component, the batteries can be too weak to produce a strong enough carrier for any learning remote control to detect!!!! When a code fails, replace the batteries FIRST!
 - 2. Tap instead of Pressing and Holding** - With buttons that the client will only tap when using, this may produce better results. Normally, you should press and hold.
- OR
- 2. The "Flutter" Technique** - If you are having problems with a Code that has to be sustained (like volume up or down), sometimes fluttering the button on the original remote at least seven times while you are learning will successfully teach the code.
 - 3. Vary the Distance between the Remote and the Learning Sensor** - We recommend that you start with a distance of half an inch between them. If no other technique works, try varying the distance by doubling it each attempt. Keep trying until you are at least 5 feet away.
 - 4. Try Standalone Learning, see page 23.**
 - 5. Call our technical support department at 1-800-901-0800** to see if they have a cross reference for the brand and model you are using. If there isn't a cross reference, they will ask you to ship the remote to our engineers so the codes can be added to the database.

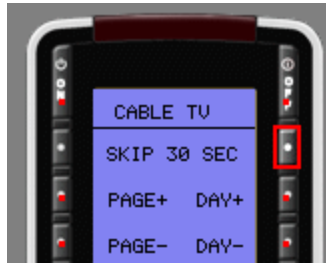
Learning IR Codes One at a Time

When all you need is a code or two, this is the method to use. If you need to teach an entire set of codes from a remote control, skip to the Batch Learning section on page xx.

- 1** Connect the MX-950 to your PC and verify that the ActiveSync icon in the lower right hand corner of your PC screen is green.



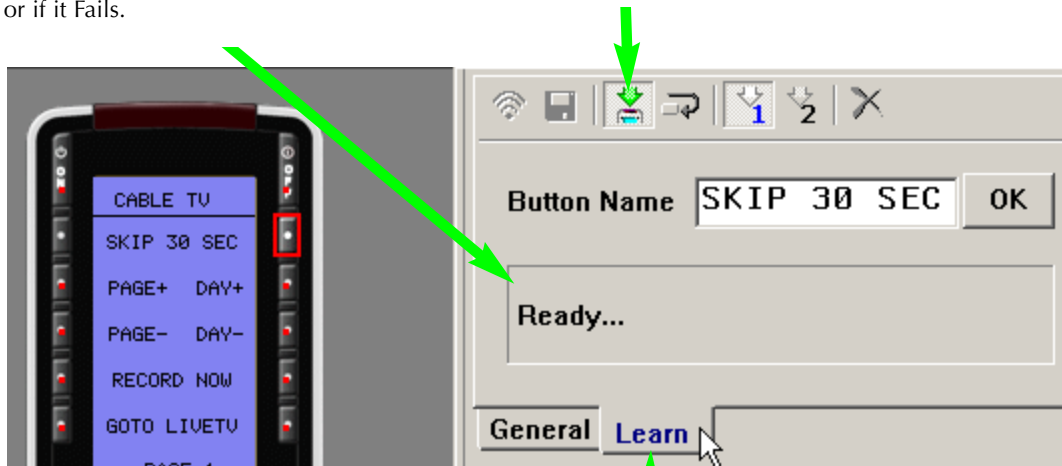
- 2 Select the button that you want to teach to by single clicking it on the simulator.



- 3 Click on the LEARN Tab or choose Learn from the Program. There will be a pause, while the PC communicates with the MX-950, then the info window will display "Ready".

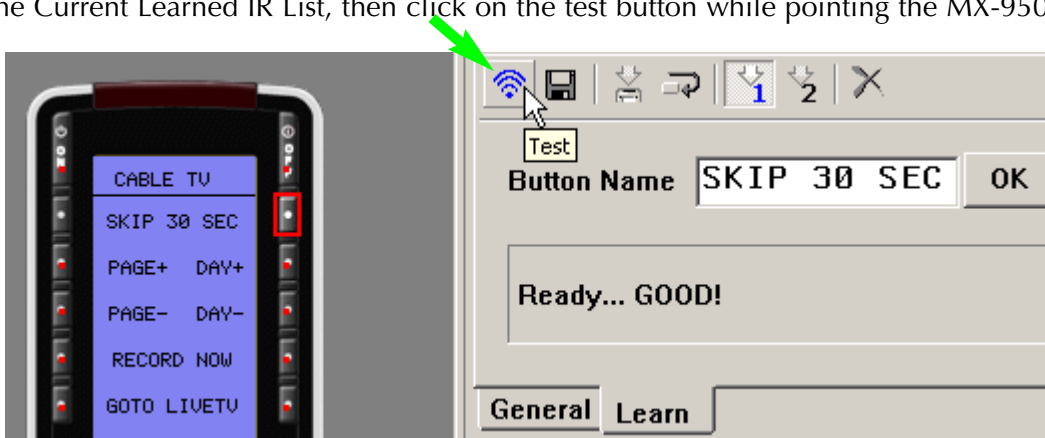
The Learning Information window prompts you when the system is Ready to learn a new command and when a learned command is Good, or if it Fails.

The Learn Button re-activates the Learning process when it automatically times out or if you want to re-learn a command.



The Learn Tab reveals the toolbar for Learning.

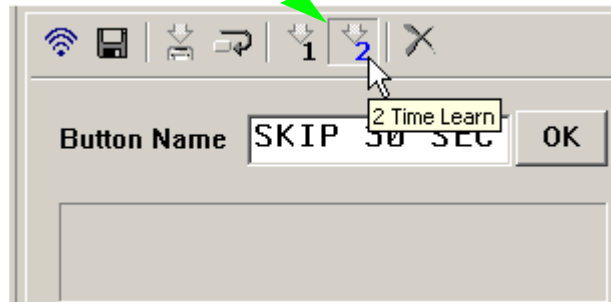
- 4 Press and hold the corresponding button on the original remote control while pointing it at the top of the MX-950 (head to head) with the remotes approximately a half inch to an inch apart. When the code is successfully learned, the window will say GOOD, confirming that the code learned "correctly." Actually, the GOOD means that the code might be good.... You need to test it. Select the code in the Current Learned IR List, then click on the test button while pointing the MX-950 at the device.



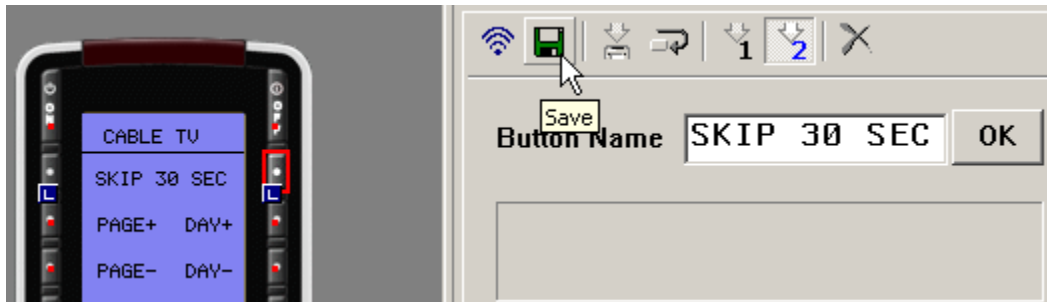
TIP - Always POWER OFF the RF Base Station when testing Learned Codes. Test line-of-sight only!

If there is any interference or IR saturation, your tests will fail, not because of learning issues but because of RF setup issues. Don't waste time, test your codes now, test RF setup later.

- 5 If the code doesn't operate the component you can try the DoubleTap learning method. This is particularly useful for components using the Philips RC5 "togglebit" protocol. Many high end audio companies use these codes. Just click on the 2 Time Learn radio button and you will be prompted to learn every code twice.



- 6 Click on SAVE - You must click on SAVE to save the LEARNED command. The blue "L" learned flag appears on the button you taught the command to.



Learning a Batch of Buttons Quickly

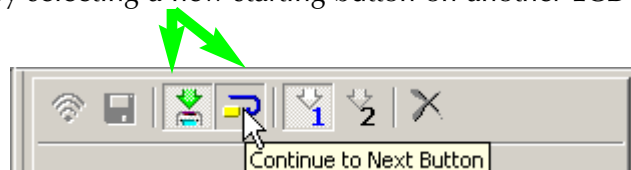
Using this method, MX-950 software will automatically save and select the next button, saving lots of time when you are learning an entire remote control. Key to your success are two tips:

Tip #1 - Always label all your buttons before beginning

Tip #2 - Verify with one button that the codes from the new remote learn normally.

Once you've prepared, batch learning goes very quickly:

- 1 Select the STARTING Button - Select the button that is the top left of the buttons you want to teach to. When MX-950 Editor automatically saves and selects the next button it moves left to right, unless it is learning a group of buttons with similar functions. When you are batch learning the Volume Group, MX-950 Editor first learns Volume Up, then Volume Down, then Mute, then advances to the next group.
- 2 Select both the LEARN and the CONTINUE button - The combination activates the batch learning capability of MXEditor. It is normal for MX-950 Editor to time out after learning the LCD page, and again after learning the hard buttons. The CONTINUE button remains selected, but you must restart the batch learning by selecting a new starting button on another LCD page or device, then selecting LEARN again.



- 3 **Watch the LEARNING Window** - When the info window says READY, press and hold the button on the original remote control. When it says GOOD, release the button. If it says FAIL, reattach the same command. When you see that a new button has been selected and the LEARNING window says READY, then teach the new command from the original remote control.

Tip - To skip a buttons in the automatic sequence, select the next button you want.

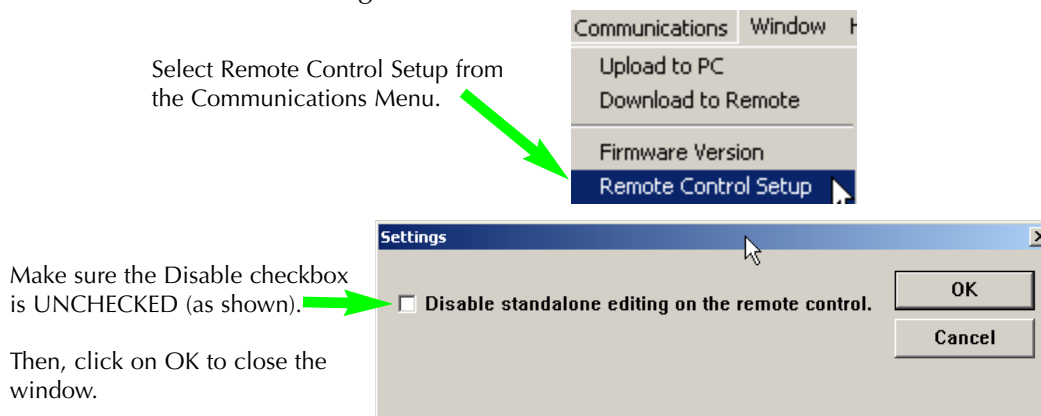
Tip - You can test any code by selecting it on the simulator and clicking on the TEST button.

- 4 Remember to save your work, go to the File menu and select SAVE.

Standalone Learning

With some PC's, the interconnection between the Operating System (Windows) the USB interface, the remote and the software can create learning problems with any code. If you have tried all of the tips listed on Page 20, it is worth trying Standalone Learning.

- 1 From the Communications Menu, select Remote Control Setup. You may have disabled the Standalone Editing feature. Make sure that the Disable checkbox is UNCHECKED.



- 2 Download to the remote control. Now all your buttons are correctly labeled.
- 3 Disconnect the remote from the USB cable.
- 4 Press and hold both the LISTEN button and the ENTER button for five seconds. The EDIT menu will appear.
- 5 Select the LEARN button from the EDIT menu on the MX-950.
- 6 Choose between an LCD button on either the LISTEN or the WATCH pages (DEVICE BTN) or a normal LCD or hard button within one of your devices (BUTTON). The top of the page now displays LEARN.
- 7 Navigate to the button you want to teach and select it. The top of the page now changes to READY. Teach the command you want, observing the top of the page. If it says FAIL, reattach it. If it says GOOD, then LEARN, select the next button you want and teach to it. When you are finished, simply press WATCH or LISTEN several times until the MX-950 is back in normal operating mode.
- 8 Now, upload to the PC and save the file.

Macro Programming

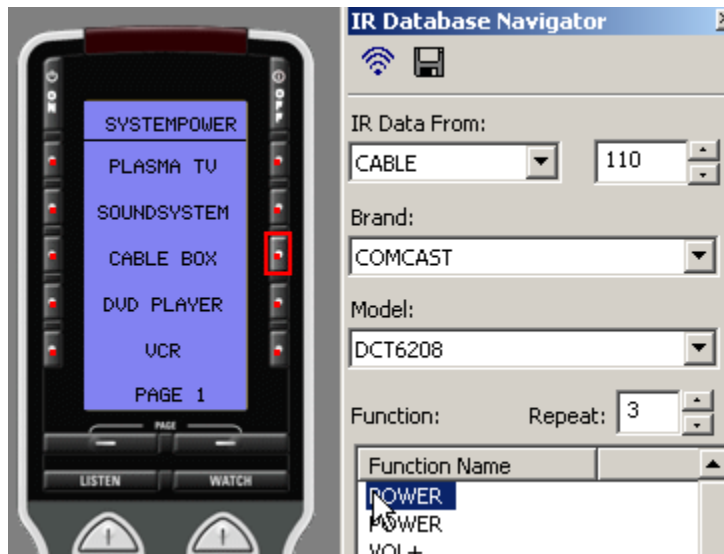
Bullet Proof Macros or Point N Pray?

Professional Installations Require “Bullet-Proof” macros (all discrete codes or workarounds, no toggle commands). A Point and Pray macro is created when you place a toggle command in the macro (like a TV Power command). The use of Point & Pray macros that only work if the customer follows strict rules will create service calls and a lot of bad will (for example, you force the customer to verify that the system is completely off before using the TURN ON macro). When you cannot find discrete power commands, create an extra device called “POWER” or “SYSTEMPOWER” and give your client one place to find all the power commands. Instruct them to power on their system manually from this easy, convenient page, then return to WATCH or LISTEN to use the automated input switching Macros for the ACTIVITIES like Watching CABLE, Watching a DVD movie etc.

In this example, the programmer has created a device called SYSTEMPOWER. The client has one convenient page to power up their system manually.

Each button is labeled for the power command the programmer has placed via the IR Database Navigator.

This is much better technique than programming a Point N Pray Macro that will result in much customer frustration.



Finding Workarounds When There Are NO Discrete Codes

By creatively experimenting you may find that you can workaround the lack of discrete codes. This takes time and there is no guarantee that you will find a workaround for any given component. Here are some common examples:

DVD and VCR Power Workaround

Most DVD players will turn on when off when they receive a Play command. Thus you can workaround like this:

DVD ON = 1) Play
2) DVD Stop

DVD OFF = 1) Play
2) A delay of 2 to 4 seconds
3) DVD Power (toggle command)

TV scrolling “INPUT” Workarounds

Many televisions respond to a channel up or a channel number command by changing to the Antenna input regardless of what input was last selected. This creates an “anchor” action that puts the television in a known input. Thus you can create a workaround as follows:

EXAMPLE - CH Up takes TV to the ANT A input (and the TV has 5 inputs -Ant A, Ant B, EXT1, EXT2 and EXT3)

- TV to EXT3 = 1) Ch Up (takes TV to ANT A regardless of what input was last selected)
 2) Input (takes TV to next input - ANT B)
 3) Input (takes TV to next input - EXT 1)
 4) Input (takes TV to next input - EXT 2)
 5) Input (takes TV to desired input - EXT 3)

Using the Macro Window

The Macro Window controls macro recording as follows:

Record- This is the fastest way to record a macro. Select a button, click on Record, then use TREE View to navigate to the device and page of a button you want. When you click on the button, it is added to the macro as a macro step.

Save - Click to stop Macro Recording and save your work.

Delay - Click to open the delay window. Any step can be a delay between .1 and 30 seconds. Longer delays can be created by using more than one delay.

Test Macro - Play back your macro by following these steps:

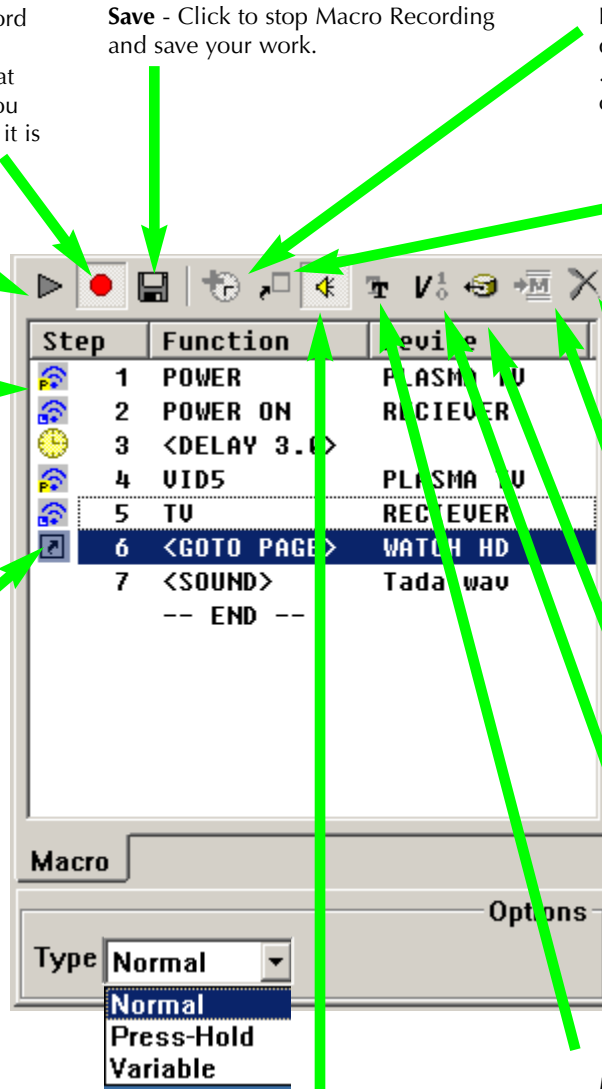
- 1) Select the first step in the macro.
- 2) Connect to an MX-950
- 3) Click on the TEST button.

Draggable Macro Steps - In this window, you can view all of your macro steps. You can click and drag any step to any position, changing the order of the macro.

Normal, Press and Hold and MX-950 ONLY -Variable List Box - A "Normal" macro has one sequence of steps that will always playback when the button is pressed.

A "Press and Hold" macro has two sequences, one sequence is played when the button is pressed normally. The other sequence is played when the button is pressed and held for longer than the specified time.

A "Variable" macro has two sequences. One sequence is played back when the selected variable=0, the other when the variable=1.



Jump - As the last step in a Macro, you can specify a jump to any page of any device. You can program another jump in the macro to display a page with a status feedback message or image.

Delete - First select the step you want to delete, then click on this button (or the Delete key on the keyboard).

Import a Macro - First select the the button without a macro, then click on this button, then click on the button that has the macro you want imported.

IR Data - Click on this to open IR Database Navigator, then drag a code from the Navigator to a macro step.

MX-950 Only - SET VARIABLE Opens the Set Variable window, which enables you to pick an already-created variable and set it to 0, 1 or to simply Invert its status.

MX-950 Only - Sound - Any step can have a sound WAV file programmed by dragging a sound from the sound gallery to the macro. However, to program a second sound file in the same macro (so that there is a beep at the beginning and a "tada" at the end of a macro), you must program a delay in between the two sounds as long as the first sound or longer.

MX-950 Only - Text - Any step can make the button label change. If you want the label to stay changed, insert a delay after the text step to keep the text on for enough time for your client to read it.

Tip - All Buttons Can Be Macros except the Watch, Listen and Page buttons.


Programming a System Power On Macro

Set up your laptop and the connected remote within operational range of the home theater system while programming a macro. Macros that the client will use to turn the system on require extensive testing of delays and you can expect to do a lot of experimenting while programming.

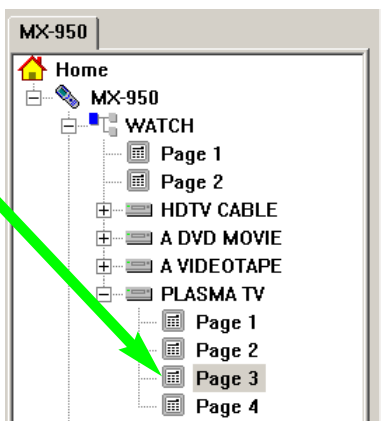
In this example, the WATCH device's ON button is programmed to turn on the system, configure all the Inputs and Modes for the client's favorite activity, watching HDTV Cable TV.

- 1 In Tree View, navigate to the WATCH device. On the simulator, select the On button.
- 2 Verify that the Type list box at the bottom of the Macro Window has the default NORMAL selected.



- 3 Click on the RECORD icon  or select Macro from the Program Menu.

- 4 In Tree View, expand all the pages of the devices you are going to power on. Navigate to the first device you'd like to turn on. Since the Plasma TV in the example system takes several seconds to warm up, it is the first device we'll turn on. With single clicks on the pages inside the Plasma TV device we find the P-On command on Page 3.



- 5 On the simulator, click on the button with the device's Power On command.



The new step appears in the Macro spreadsheet:

- 6 Program steps to power on the other components in the system. In this example, the cable box is powered on all the time, since it is a DVR, so the only other component to power on is the surround sound receiver.

Step	Function	Device
1	P-ON	PLASMA TV
2	POWER ON	RECEIVER
-- END --		

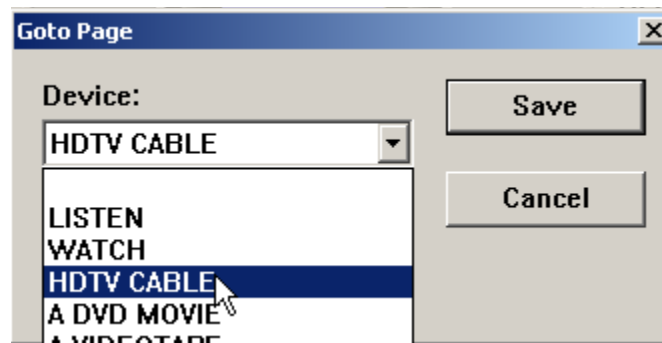
- 7 Program steps to select the correct TV and Receiver input for the client's favorite activity. In this example the client's favored activity is watching Cable TV. The cable box is connected to the TV input of the Surround Sound receiver and the component output of the cable box is directly connected to the Plasma TV's Video 5 input.


Step	Function	Device
1	P-ON	PLASMA TV
2	POWER ON	RECEIVER
3	TV	RECEIVER
4	VID5	PLASMA TV
-- END --		

- 8 Program a jump to the Device and Page they use for their favorite activity. Click on the JUMP icon.




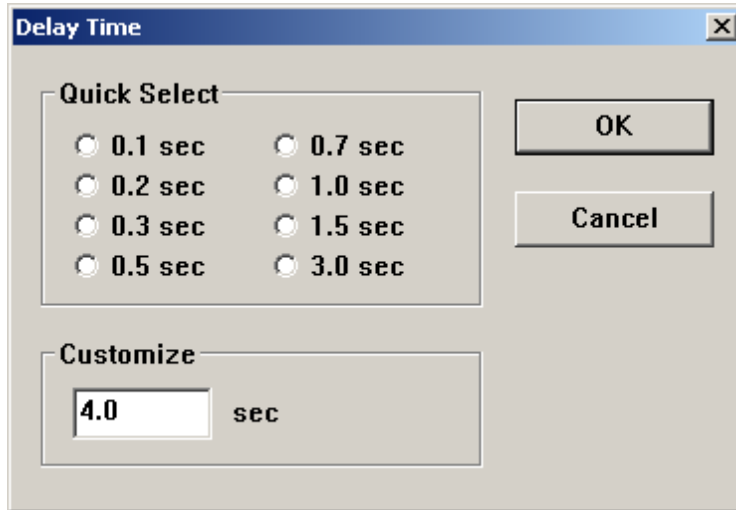
- 9 Select the correct device and page from the Jump window. The jump appears in the column under Jump.



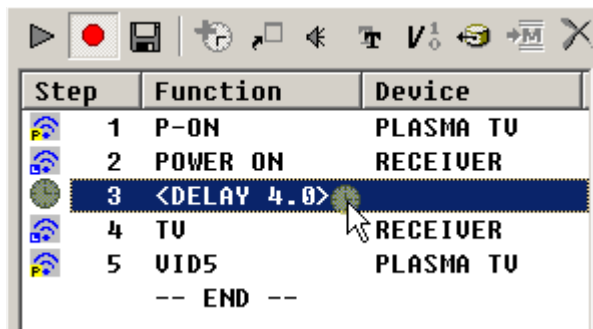
- 10 Now, test if delays are necessary in your macro. First, turn the TV and the Receiver to the wrong input, then turn off everything in the theater. Point the connected MX-950 at the system. Select the first step in the list by clicking on it. Now, click on the TEST  button. Observe the television and the receiver. Did they both switch to the correct input?

In the example system, the TV requires four seconds of warmup before the Input will correctly change. The surround sound receiver requires two seconds, so we program a four second delay after the TV and the Receiver power on.

- 11** Select the Delay icon , then when the delay window opens, click on the preset amount of delay or enter any time between .1 second and 30 seconds in the "Customize" window.



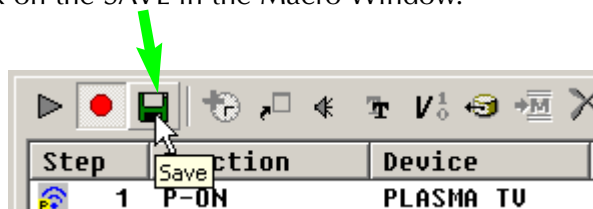
- 12** The new step appears in the list. Now, drag the delay step to the correct location.



TIP - Sometimes a change in order can provide the delay you need.

Each IR command lasts approximately 1/3 of a second, so if you have 3 commands, one second has elapsed.

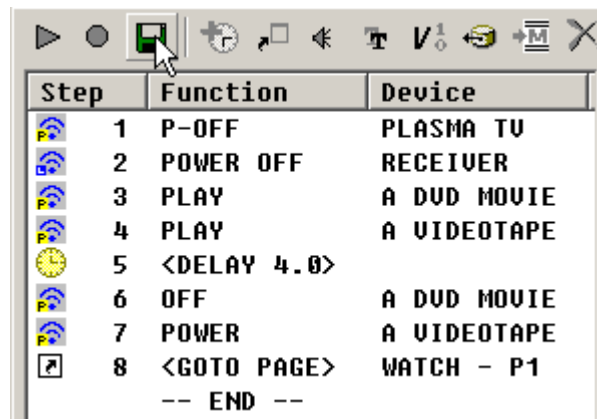
- 13** Again, turn the TV and the Receiver to the wrong input, then turn off everything in the theater. Point the connected MX-950 at the system. Select the first step in the list by clicking on it. Now, click on the TEST button. Observe the television and the receiver. Did they both switch to the correct input? Continue to revise the macro with delays or changes until the macro ALWAYS correctly turns everything on and switches the surround sound receiver and television to the correct input. When the macro is perfect, click on the SAVE in the Macro Window.



- 14** Remember to save your work, click on SAVE in the File Menu.

Programming a Power Off Macro

A Power Off macro is much simpler than a Power On macro, since there are rarely any delays to test, etc. Usually, to give the client some feedback that the macro is working, the TV is turned off first.



Step	Function	Device
1	P-OFF	PLASMA TV
2	POWER OFF	RECEIVER
3	PLAY	A DVD MOVIE
4	PLAY	A VIDEOTAPE
5	<DELAY 4.0>	
6	OFF	A DVD MOVIE
7	POWER	A VIDEOTAPE
8	<GOTO PAGE>	WATCH - P1
	-- END --	

When you are forced to “workaround” a DVD player or VCR without a discrete off command, you will make the macro more reliable if you place the time consuming anchor (the play command) at the beginning of the macro. Make sure that you turn the DVD player off before testing this kind of workaround. You are testing the worst case, you know that a toggle type power command will turn the DVD player off, you are concerned about an event that might happen. The DVD player is already off, but the client presses the MAIN Power Off to turn everything else OFF. If you only programmed a toggle Power command, everything else would turn off, but the DVD player would turn on. This “workaround” ensures that the DVD player turns off.

Finally, so that this macro will work correctly when you set up Punch Through, program a jump to the WATCH pages. Thus if the user presses OFF after watching a DVD movie, the MX-950 will jump to the WATCH device, perfect for picking up the remote tomorrow night!

Copying or Importing Macros for Activity Macros

You can often speed programming by instantly inserting all of the steps of a previously programmed macro as the starting point of a new macro. The inserted steps are completely editable, without changing the original macro.

- 1 Do not start recording at the new location. Simply select the button where you would like the macro inserted. Then click on the IMPORT button.



- 2 Navigate to the device and page where the original macro is programmed. Click on the button that contains the macro. All of the steps are copied/cloned into the new button location.
- 4 Edit as needed and click on SAVE.

Tip - Copy and Paste Macros

You can first select the button with a Macro, select Copy from the Edit Menu, then select the button without a macro and select Paste from the Edit Menu. The keyboard shortcuts for Copy are Control|C, for Paste Control|V.

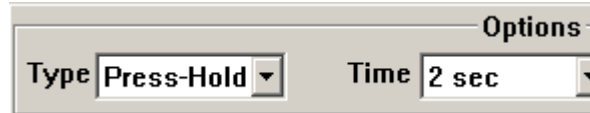
Push and Hold Macros

By selecting this option, you now have the ability for one button to issue two different macros. One macro is issued if the button is pressed briefly, another completely different macro is issued if the button is pressed and held. Here is a way to use Push and Hold macros that we think you might find useful for power user clients.

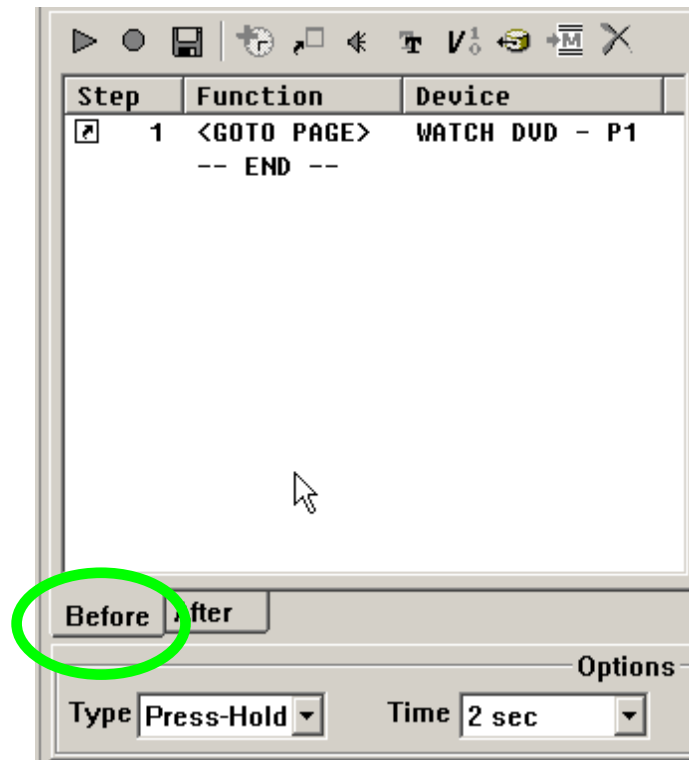
Power users constantly switch devices and make adjustments to different components so waiting for the Activity macros to finish reconfiguring their system can be frustrating to them. By programming each of their activity macros to only issue when they press and hold the button for two seconds, you can program each button to simply Jump to the device when they tap the button.

Here's:

- 1 Select the button you'd like to program with two different macros.
- 2 Select Press-Hold Mode from the Type list box at the bottom of the Macro Window. Then, set the TIME in the Options window to 2 seconds. This ensures that the client will have to Press and Hold the button two seconds to issue the Macro.

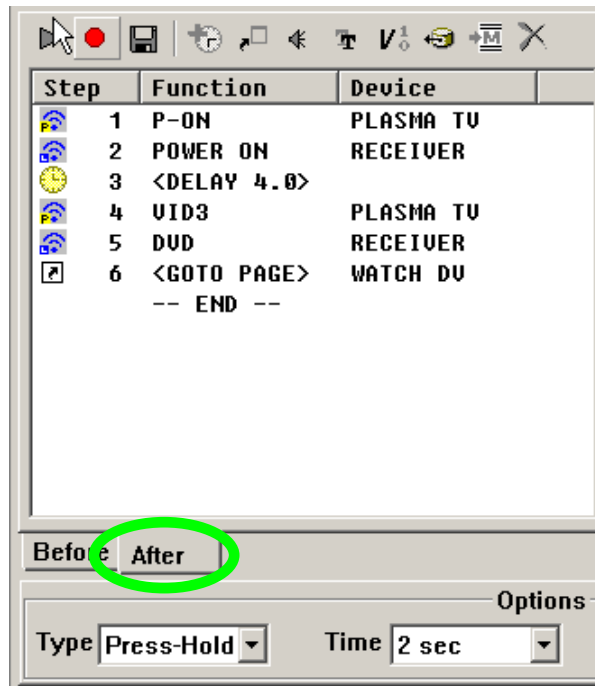


- 3 Click on the Tab at the bottom of the Macro Window labeled BEFORE, then program a jump to the device only.



When the client presses the button for less than 2 seconds, only the jump occurs.

- 4 Click on the Tab at the bottom of the Macro Window labeled AFTER, and program the full macro (in the example shown; everything this system needs to Watch a DVD).



Tip - Reverse priority for systems with both casual users and power users...

Program the simple jump to occur after a press and hold, while the Activity macros occur with a normal tap.

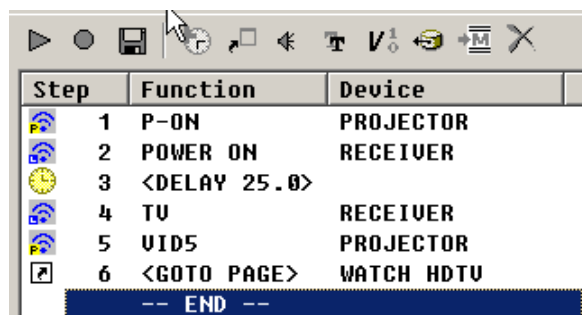
Variable Macros (MX-950 Only)

This is another method for one button to issue two different macros. One macro is issued when the button is pressed and a particular variable is "0", another completely different macro is issued if the button is pressed and the same variable is now equals "1".

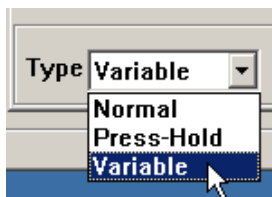
Variables allow you to track when a particular button has been pressed. Then when another button is pressed, you can do something different based on the previous button press.

Clever use of variables can enable you to add all kinds of elegant improvements to operation. Here's an example of variables, used in this case to remove the delays in the activity macros on the Watch page once the projector is on.

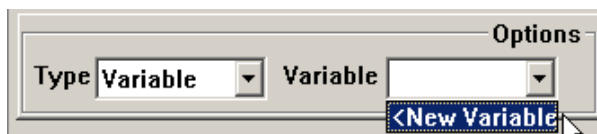
- 1 The macro to turn on the system and watch Cable TV is very long in this example system. The projector requires 25 seconds to warm up before the inputs can be changed.



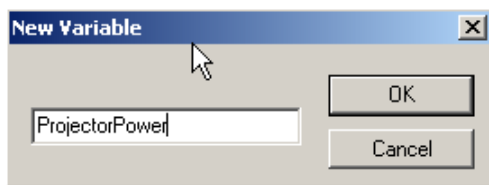
2 In the Type list box at the bottom of the Macro Window, select Variable as the type.



3 In the Variable list box that now appears, select New Variable.



4 In the New Variable window that opens, type in a descriptive name, then click on OK.

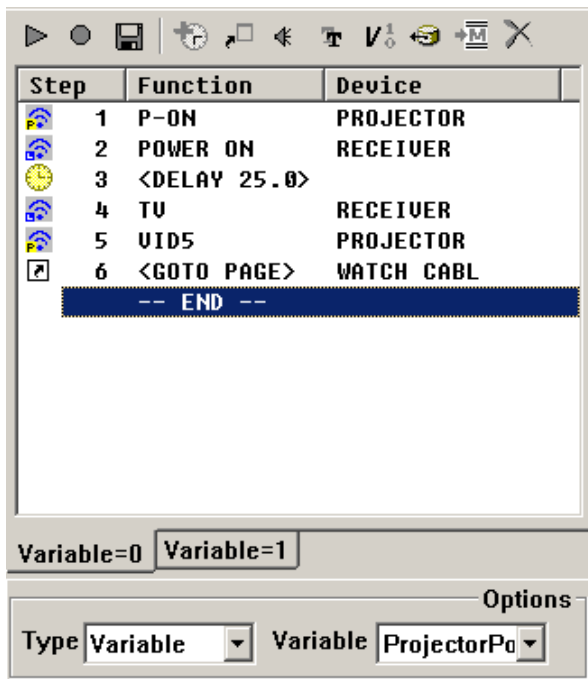


5 Verify that the new variable name appears in the Variable window as the selection.

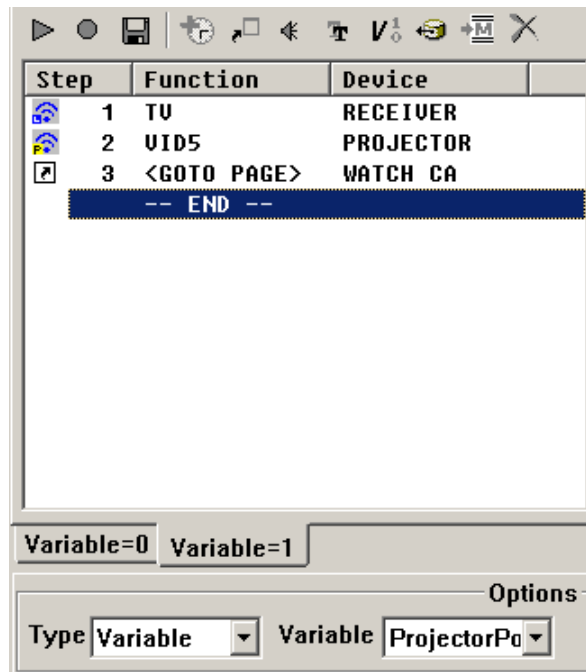


6 Now your macro window displays two different tabs. One is the macro that will be sent when the projectorpower variable = 0, the other when the projector power variable = 1. Program the macro in Variable=0 with the Power On commands and the delay, while the macro in Variable=1 does not.

ProjectorPower Variable = 0



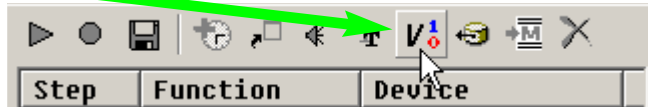
ProjectorPower Variable = 1



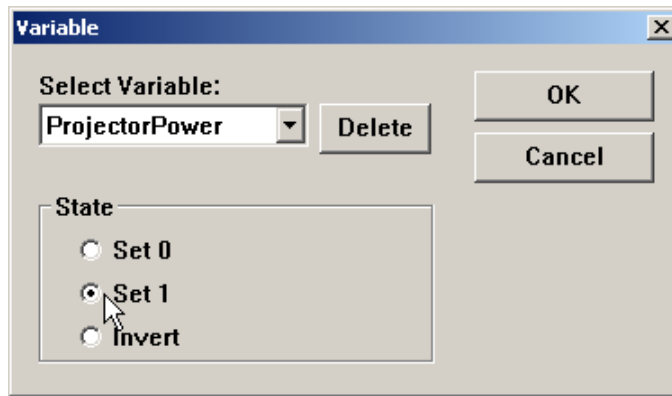
Tip - You must program all your activity and power macros to be Variable macros

Now, you must program all macros that the client might use to turn on the system with a variable change that changes the variable ProjectorPower to "1". Thus no matter what button you use to turn on the system, the MX-950 will know the true status of the projector is on. Likewise all macros that turn the system off must change the variable ProjectorPower to "0".

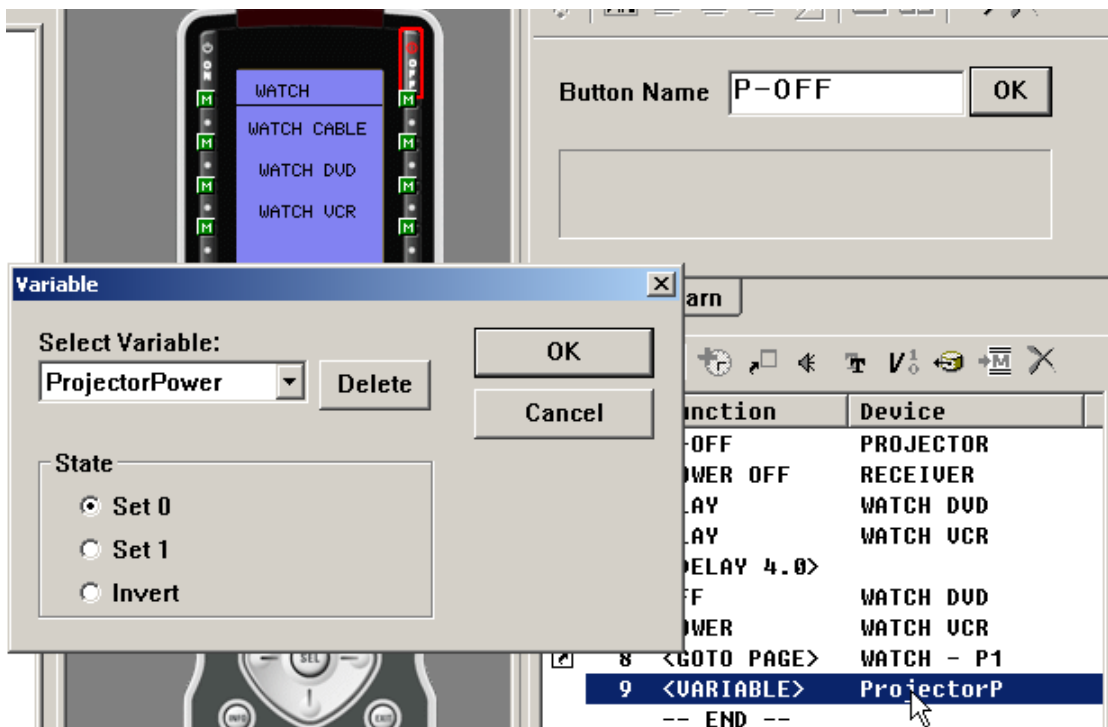
- 7 In all macros that power on the projector, repeat steps 1-7, then add a new step to all the macros. Click on the Set Variable button on the macro toolbar.



- 8 The Set Variable window opens. Select the ProjectorPower variable and set it to a state of 1 (indicating that the projector is now powered on). Afterwards, the new step appears in the macro list.



- 9 In all macros that power OFF the projector add a new step to the macros. Click on the Set Variable button and set the Projector Power variable to equal "0" after the projector is off.



Using Sounds (MX-950 Only)

Setting the Default Sound

MX-950 Editor enables any button to have a sound play when the button is pressed. You can set a default sound for every button throughout the configuration as follows:

- 1 From the File menu select User Preferences. The User Preference window will open.
- 2 Select one of the three options:

None - Your buttons will only make sounds if you drag a sound from the sound gallery to a button.
 Default Beep - Whenever a button that has an IR command or macro is pressed, the MX-950 will beep.
 User Defined - You browse to a file location and select a wav file that will play whenever an active button is pressed.

Using the Sound Gallery

MX-950 Editor enables you to program any button with as many sounds as you like. However, for each sound, you must program a delay after the sound, long enough for the sound to play completely. To use sounds, click on the Sounds icon in the macro toolbar, or select Sound Gallery from the Tools Menu. Simply drag a sound into a macro, then place the optimum delay after each sound.

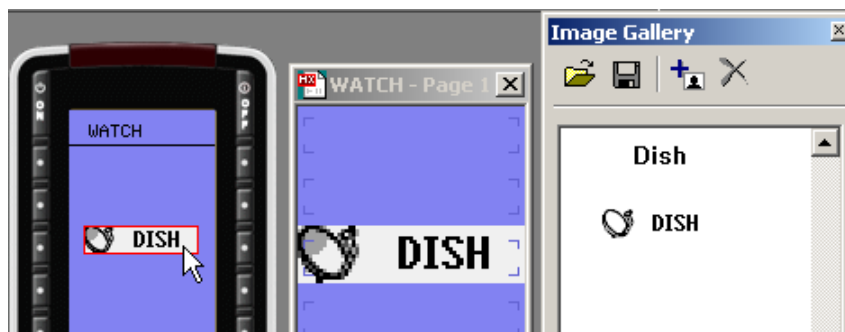
In this example four sounds play back when the button is pressed. For each sound to play, a delay must be placed after it.

Step	Function	Device
1	<SOUND>	Tada.wav
2	<DELAY 1.5>	
3	<SOUND>	BangBang.WAU
4	<DELAY 3.0>	
5	<SOUND>	BIRD14A.WAU
6	<DELAY 1.5>	
7	<SOUND>	BOING1A.WAU

Using the Image Gallery (MX-950 Only)

The MX-950 has a limited ability to use images instead of text. First, make sure you are in Simulator and Page View mode, then double click on the page you want to place an image as a button label. Double clicking opens a new Page View and sets the Simulator to the same page. Now, from the tools menu, open the Image gallery. Drag an image from the gallery to the Simulator View. Simulator View distorts the size of the image, but allows you to drag the image to any position on the page. Page View gives you a much better idea of what the image will look like, but does NOT allow you to drag or delete the image. By using both views side by side, you control the image position in Simulate View, but judge it's position in Page View.

By using both Simulator and Page views side by side, you control the image position in Simulate View, but judge it's position in Page View.

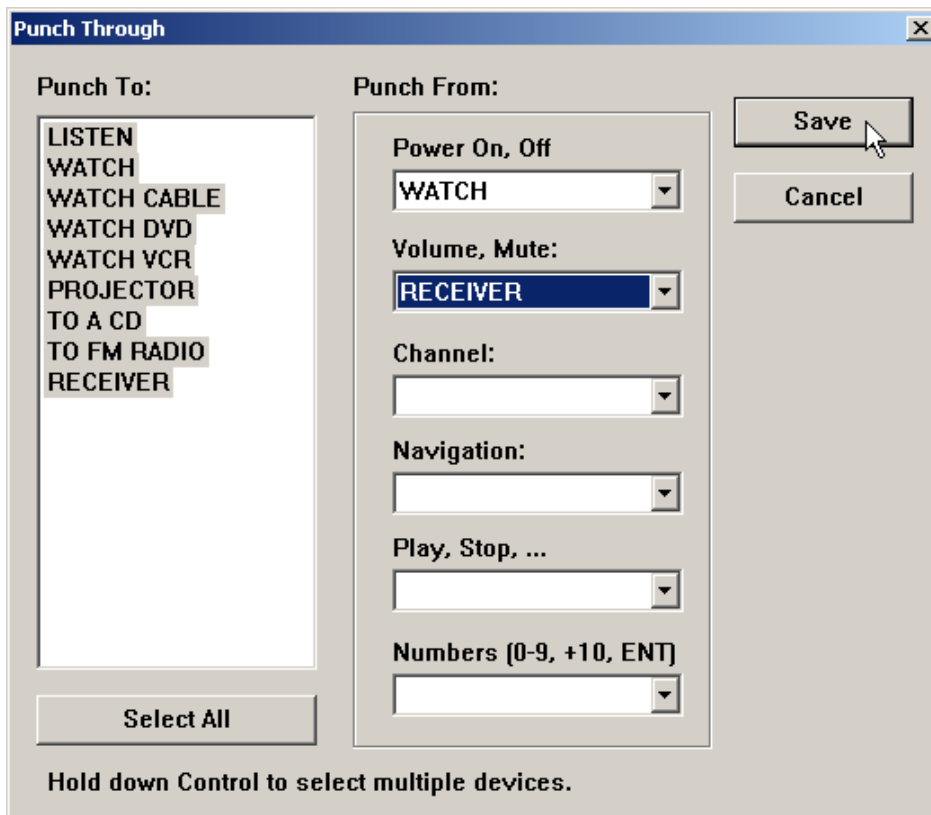


You can import bmp or jpg images to the gallery, however, they cannot be larger than 64 pixels by 88 pixels. They can be four color (black, white, light grey and dark grey).

Programming Punch Through

Punch Through allows you to set the same functions on all devices very quickly. You can punch through any of the groups of buttons on the MX-950. In this example, the Power On and Power Off buttons on every page and every device are set to punch through to the WATCH Power On and Power Off buttons, thus the user can power off the system without returning to WATCH to press Power Off. Likewise, the Volume Up, Down and Mute have been set as a group to punch through to the surround sound receiver. After programming, flags remind the programmer that the buttons have been set to punch through.

- 1 Open the Punch Through window by clicking on the shortcut button in the toolbar or by selecting Punch Through from the Program Menu.
- 2 Select the devices which you want to change programming by clicking on them while holding down the CONTROL key on the keyboard. If you want them all selected (normal for Volume Up, Down and Mute), simply click on the Select All button. Any device you select will be HIGHLIGHTED in the "Punch To" list.



- 3 Select the device that has the codes you want used in the Punch From list.
- 4 Click on SAVE. Check the devices you programmed, you should see the red PT (Punch Through) flag on every button affected on all the devices you programmed:

Programming RF Control Options

The RF Setup Window

The RF Setup window opens after selecting RFControl from the Program Menu or clicking on the shortcut button.



Adjusting Signal and IR Output Options

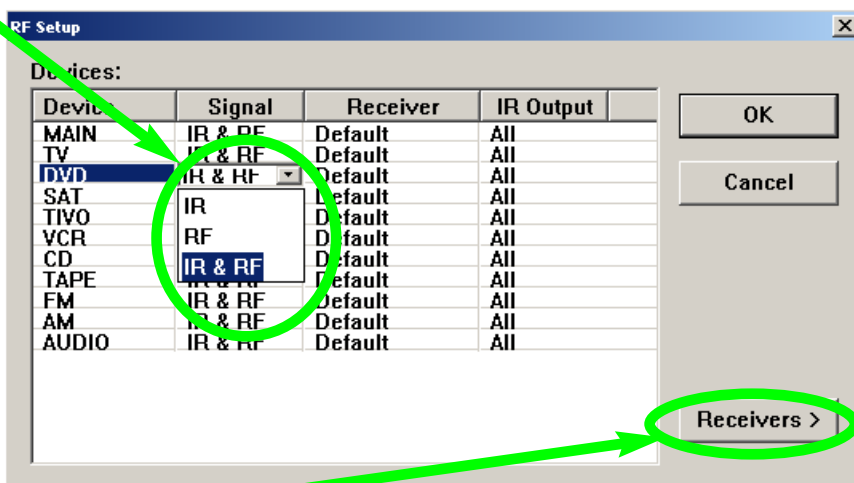
The RF Setup window enables you to adjust the properties of RF Control by clicking on the intersection of a row and a column and then selecting from the pull down list box the property you want. All of your devices are displayed. You can set each device individually to be controlled by clicking on the cell you want to change. After clicking, a list box of options will appear.

SIGNAL controls how the MX-950 will send commands:

IR and RF - Both RF signals and IR commands are sent from the MX950. The RF signals will also be issued as IR commands by the MRF-300.

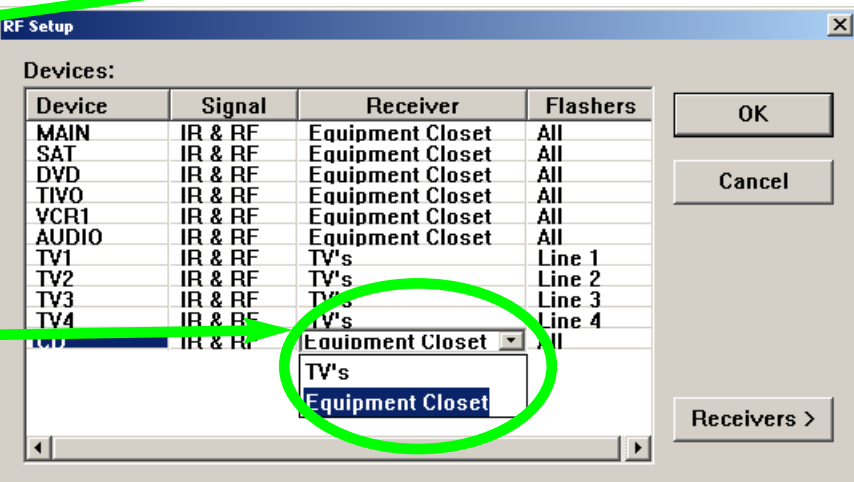
IR - Only IR commands are sent from the MX950, as a result the MRF-300 does not send any commands.

RF - Only RF signals are sent from the MX950, as a result only IR commands from the MRF-300 are received by the device.



RECEIVER enables you to select which MRF-300 receiver will receive the commands for this device. Thus, you can send commands to a device in another location via a second MRF-300 placed in that location (up to 16 in one house).

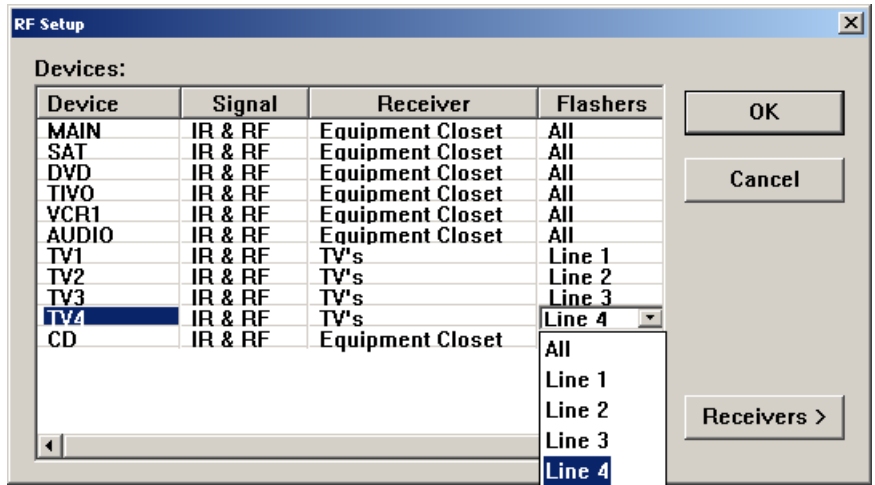
Note: The default setting of the RF ID# is ID#1. If you do not reset the ID in the receiver window shown here, set the ID# on the bottom of the MRF-300 to ID#1.



USING MX950 CORE ENGINE TO EDIT

IR OUTPUT controls the Line Outputs for Flashers affixed to the front panels of components. You can opt to either send IR Commands to:

- ALL - The commands are sent to all of the Flashers
- 1-6 - Just the specified Flasher receives the IR commands (Useful when identical TV's or VCR's are utilized in the system)



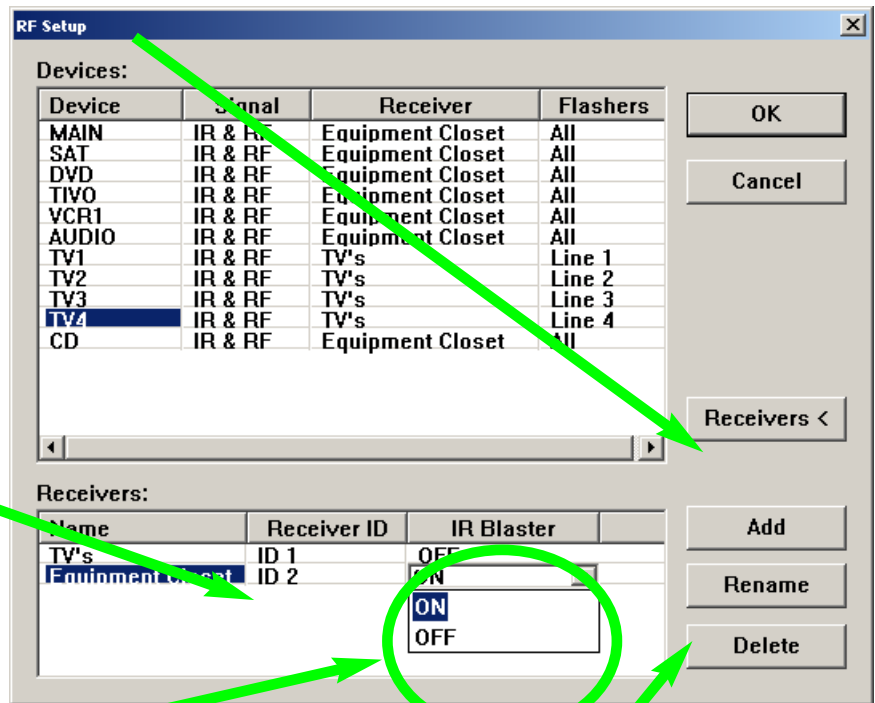
Adding RF Base Stations, Conguring ID#'s and Front Blasters

To add a new receiver to the list, to change the Receiver ID# of your existing receiver or to enable/disable the Front Blaster, click on the Receiver button of the RF Control window.

After pressing the Receivers button, the RF Control Window will enlarge revealing the Receiver configuration options. Again, you click on a cell to adjust.

The Receiver ID cells enable you to change the ID# of each receiver, so that commands for one will be ignored by the other if set to different ID's.

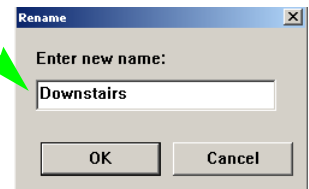
Note that in this system, the MRF-300 in the equipment closet is set to ID#2 and the MRF-300 connected to the identical TV's is set to ID#1.



If you want the Front Blaster turned OFF on any receiver, reset it by clicking on the correct CELL and selecting OFF.

NOTE: In some installations, the MRF-300's Front Blaster is so powerful that it can overload nearby components and give poor or intermittent operation. Try re-positioning the MRF-300 to reduce the power flooding the cabinet or turn the Front Blaster off.

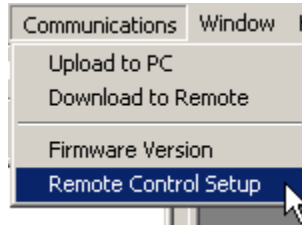
You may rename a receiver to something more descriptive by first selecting the receiver's name cell, then clicking on the Rename button.



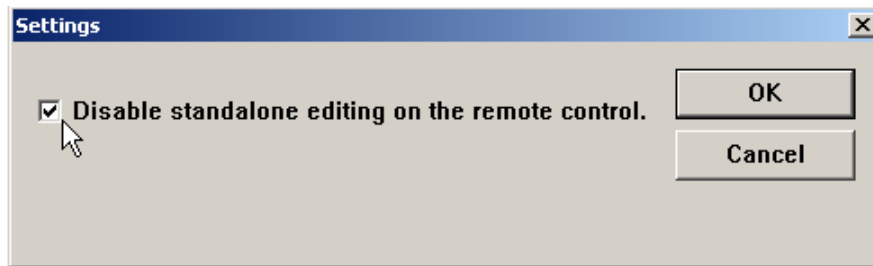
Enable or Disable Standalone Editing

You can disable the Edit menu of the MX-950. This is the menu that appears when you press and hold LISTEN and ENTER for five seconds. Though the ability to change the labels and to learn codes standalone is useful to some installers, you may want to prevent your customer from accessing these settings.

- 1 Open the Remote Control Setup window by selecting it from the Communications Menu.



- 2 Check the Disable checkbox if you want to prevent anyone from accessing the Edit menu on the MX-950. Click on OK when you've made your changes.



TIP - You cannot disable the Settings Menu.

The Settings menu appears when WATCH and Enter are pressed and held for five seconds.

Downloading

You download to the remote control by:

- 1 Make sure the remote control has charged batteries.
- 2 Connect the cable between the PC and the remote control.
- 3 Verify that the file you have open in MX-950 Editor is the one you want to download to the remote control.
- 4 Click on the Download to Remote Control shortcut button on the toolbar or choose Download from the Communications Menu. Do not move the mouse or touch the keyboard during the download.

TIP - Make sure that the cable plug is solidly connected at both ends.

Using the Setup Menu

- 1 Press and Hold both the WATCH and the ENTER button for five seconds.
- 2 Once the Setup menu appears, you can browse between it's two pages via the PAGE buttons. It will automatically time out, or you can press the WATCH or the LISTEN button to exit.

TIME (MX-950 Only) - Set the clock here, however if you want to change whether it is displayed or not, go to INDICATOR on page 2 of the Setup Menu.

BACKLIGHT (MX-950 and TX-1000 Only)- Configure the amount of time that the MX-950 will stay lit after it is picked up.

DISPLAY - You can adjust the brightness and contrast of the display. Keep the setting of color set to S/W, thus all your changes of device backlighting color will be displayed.

SOUND/BEEP - You can adjust the Volume of the MX-950 speaker. Note that TX-1000 and MX-900 editor offer BEEP volume to set the volume of the Beeps. If your client prefers silent operation, simply set the volume to 0.

PICKUP (MX-950 Only) - You can disable the Pick Up Sensor

INDICATOR (MX-950 Only) - You can disable the display of the Clock, the IR and the Battery Indicator here.

**COMPLETETM
CONTROL**

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